SOIL SURVEY

Cumberland County, Maine

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
MAINE AGRICULTURAL EXPERIMENT STATION
Issued August 1974

Major fieldwork for this soil survey was done in the period 1961–68. Soil names and descriptions were approved in 1966. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1968. This survey was made cooperatively by the Soil Conservation Service and the Maine Agricultural Experiment Station. It is part of the technical assistance furnished to the Cumberland County Soil and Water Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Cumberland County are shown on the detailed map at the back of this publication. This map consists of many sheets that were made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and shows the page where each is described. It also gives the capability unit, the woodland group, and the wildlife group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes other than cultivated crops or woodland can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of woodland and wildlife.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about wildlife in the section "Use of the Soils for Wildlife Habitat."

Community planners and others can read about soil properties that affect the choice of sites for nonindustrial buildings and for recreation areas in the section "Town and Country Planning."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices and structures.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation, Morphology, and Classification of the Soils."

Newcomers to the county will be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the general information about the county given at the beginning and end of this publication.

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Contents

Issued August 1974

SOIL SURVEY OF CUMBERLAND COUNTY, MAINE

BY GARY HEDSTROM, SOIL CONSERVATION SERVICE[1]

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH MAINE AGRICULTURAL EXPERIMENT STATION

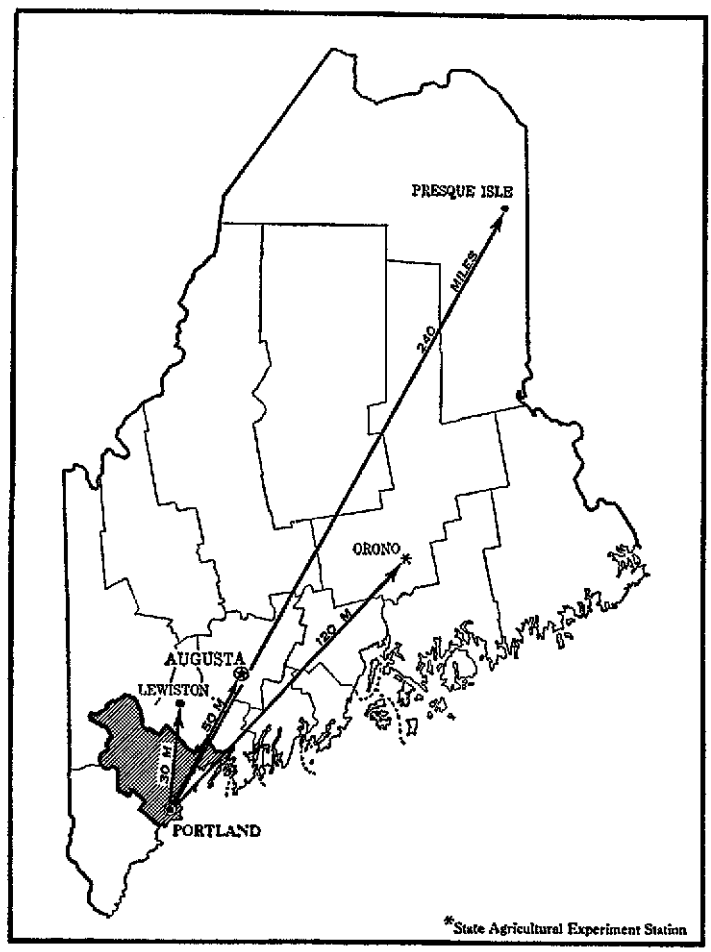

Figure 1.—**Location of Cumberland County in Maine.**

CUMBERLAND COUNTY extends from the foothills of the White Mountains to the Atlantic Ocean in southeastern Maine (fig. 1). It covers a total area of 563,840 acres, or 881 square miles. It is bordered on the north by the Androscoggin River and Oxford and Androscoggin Counties. On the south it is bordered by the Saco River and York County. Cumberland County has the largest population of all the counties in Maine.

[1] Soils surveyed by GARY HEDSTROM, DAVID LEWIS, KENNETH LAFLAMME, RICHARD RILEY, ROSLYN WILLEY, and SHELDON MICHAELS.

Portland, on Casco Bay, is the county seat, the major industrial center, and an important seaport. Portland is the center of most commercial activities of the State as well as of the county.

About one-fifth of the total acreage of the county is in farms. This acreage includes wooded areas that make up a part of some of the farms. The main farm enterprises are dairying and truck farming. The center of these activities is in Gorham and Cape Elizabeth. The principal farm crops are corn, which is harvested mainly for silage, and hay, which is composed of red clover, alfalfa, and timothy.

Farming is declining in this area, and recreational activities and opportunities are increasing. In many towns recreation is the major business activity and source of income. Approximately 85 percent of the area of Cumberland County is wooded. These areas are the source of raw materials for the lumber and pulpwood industry, and they are also used for hunting and other forms of recreation.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Cumberland County, where they are located, and how they can be used. The soil scientists went into the county knowing they were likely to find many soils they had already seen and perhaps some they had not.

They observed the steepness, length, and shape of slopes; the size and speed of streams; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have similar profiles make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near where a soil of that series was first

observed and mapped. Paxton and Hermon, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the natural, undisturbed landscape.

Soils of one series can differ in texture of the surface soil, in slope, stoniness, or some other characteristic that affects use of the soils. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates one or more features that affect management. For example, Hermon sandy loam, 3 to 8 percent slopes, is one of several phases within the Hermon series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map in the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of different soils that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. One such kind of mapping unit, the soil complex, is shown on the soil map of Cumberland County.

A soil complex consists of areas of two or more soils, so intermingled or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils. The pattern and relative proportions of these soils are about the same in all areas. The name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Limerick-Saco silt loams is an example.

Most surveys include areas in which the soil material is so rocky, so shallow, or so altered by man that it cannot be classified by soil series. These areas are shown on the soil map and are described in the survey, but they are called land types and are given descriptive names. Rock land is a land type in Cumberland County.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

Only part of a soil survey is completed when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way as to be readily useful to different groups of users, among them farmers, managers of woodland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others, then adjust the groups according to the results of their studies and consultations. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Cumberland County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general knowledge of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The six soil associations in Cumberland County are discussed in the following pages.

1. Hermon-Peru-Paxton Association

Deep, somewhat excessively drained to moderately well drained, nearly level to very steep, dominantly moderately coarse textured soils

This association is in the northwestern part of the county. It is mainly on large rolling hills that have gently rounded crests but steep lower slopes (fig. 2). Lakes and ponds occupy most of the depressions between hills. Small organic bogs are numerous.

Hermon soils make up about 52 percent of the association, Peru soils about 12 percent, Paxton soils about 8 percent, and minor soils the remaining 28 percent. This association occupies about 33 percent of the county.

Hermon soils are well drained to somewhat excessively drained, are dominantly moderately coarse textured, and contain many coarse fragments. They are in the central and western parts of this association. Peru soils are moderately well drained and have a firm, compact layer at a depth of about 24 inches. These gently sloping soils are mainly downslope from Hermon soils. Paxton soils are deep but have a firm compact layer at a depth of 17 to 25 inches. These gently rolling soils are principally in the eastern part of the association on crests and slopes of hills.

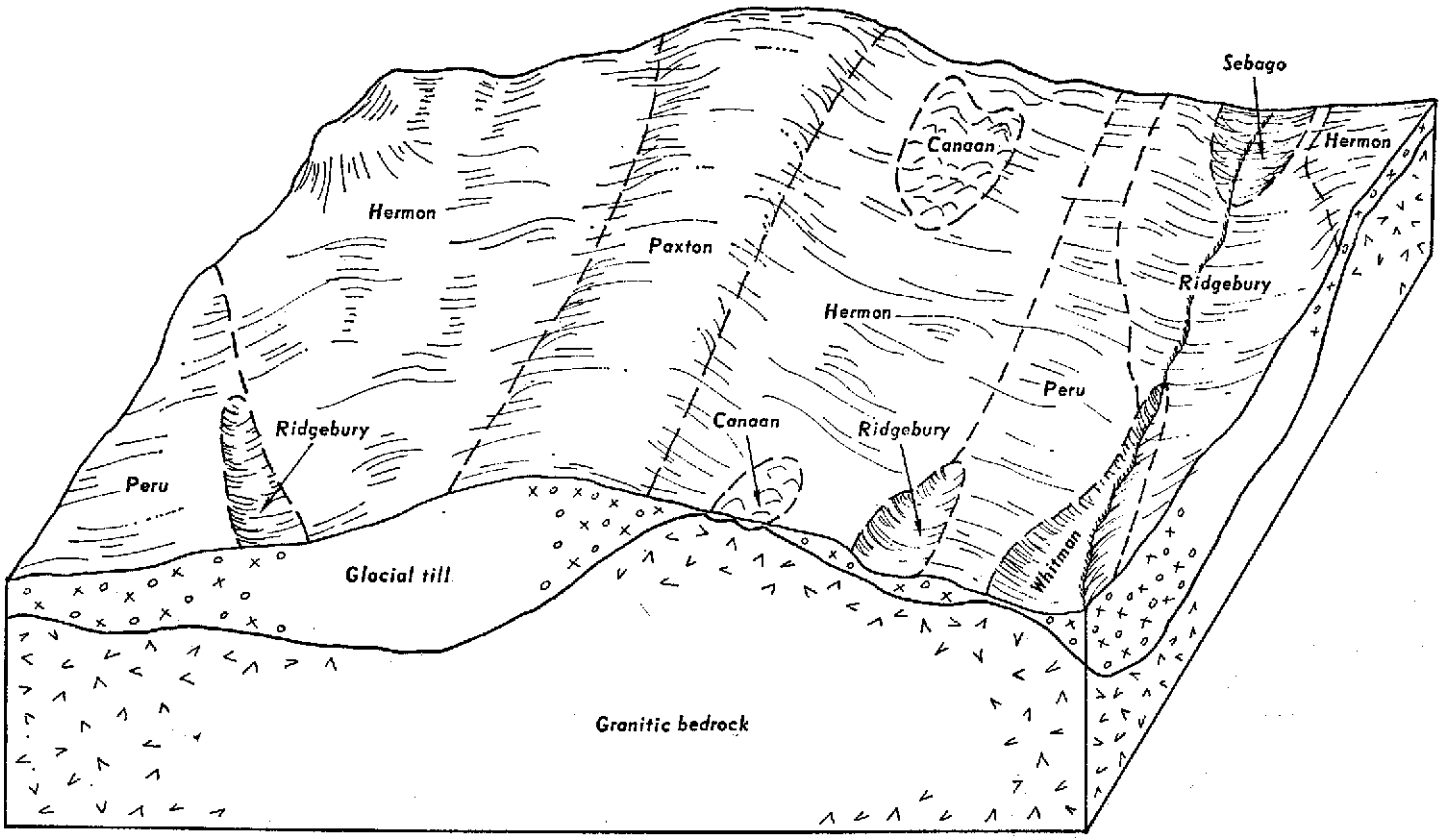

Figure 2.—**Typical pattern of soils, topography, and underlying material in association 1.**

The minor soils in this association are the Canaan, Hollis, Ridgebury, Sebago, Whitman, and Woodbridge soils. The Ridgebury, Whitman, and the organic Sebago soils are in pockets and depressional areas. The Hollis and Canaan soils are on the crests of hills and mountains and on some very steep slopes. The Woodbridge soils are in the southern and eastern parts of the association.

This association has a relatively short growing season because of its elevation. Farming is less important than it was in the past, and the farms are decreasing in number, though they are increasing in size. Most of the area is wooded. State parks, ski areas, private camping areas, summer camps for boys and girls, and individual summer cottages line the shores of the lakes and ponds in this area.

2. Windsor-Hinckley-Deerfield Association

Deep, excessively drained to moderately well drained, nearly level to steep, coarse-textured soils

This association is in areas scattered throughout the county. It is on bottom lands, glacial terraces, outwash plains, and a few hills and ridges (fig. 3). Valleys are sandy and broad.

Windsor soils make up about 26 percent of the association, Hinckley soils about 24 percent, Deerfield soils about 15 percent, and minor soils the remaining 35 percent. This association occupies about 18 percent of the county.

Windsor soils are deep, excessively drained, medium sands. These nearly level to gently rolling soils are mainly on glacial outwash plains. Hinckley soils are deep, excessively drained sandy soils that have a stratified sand and gravel substratum. Deerfield soils are deep, moderately well drained, nearly level to gently sloping sandy soils. They are in depressional areas.

Minor soils in this association are the Au Gres, Buxton, Elmwood, Ondawa, Podunk, Rumney, Saugatuck, Scarboro, Sebago, Swanton, and Walpole soils. The Au Gres, Saugatuck, Scarboro, and Walpole soils are in depressional areas on outwash plains. Sebago soils are organic and boggy, and they occupy lower positions in the landscape than the other soils in this association. Of lesser extent, but highly significant for use as cropland, are the Ondawa, Podunk, and Rumney soils on bottom lands. Buxton, Scantic, and Suffield soils, which formed in marine-deposited material, occur as islands within this dominantly sandy association. Elmwood and Swanton soils are located similarly.

Most of the soils in this association are wooded, but a few areas are used for farmland. Urban and recreational use is increasing, particularly in the vicinity of Brunswick, Gorham, and Sebago Lake.

The principal limitations of the major soils are rapid permeability and a seasonal high water table. Because of the rapid permeability, ground-water contamination is a hazard in areas where septic tank systems are used. Soils on outwash plains, particularly Hinckley soils, are a good source of gravel.

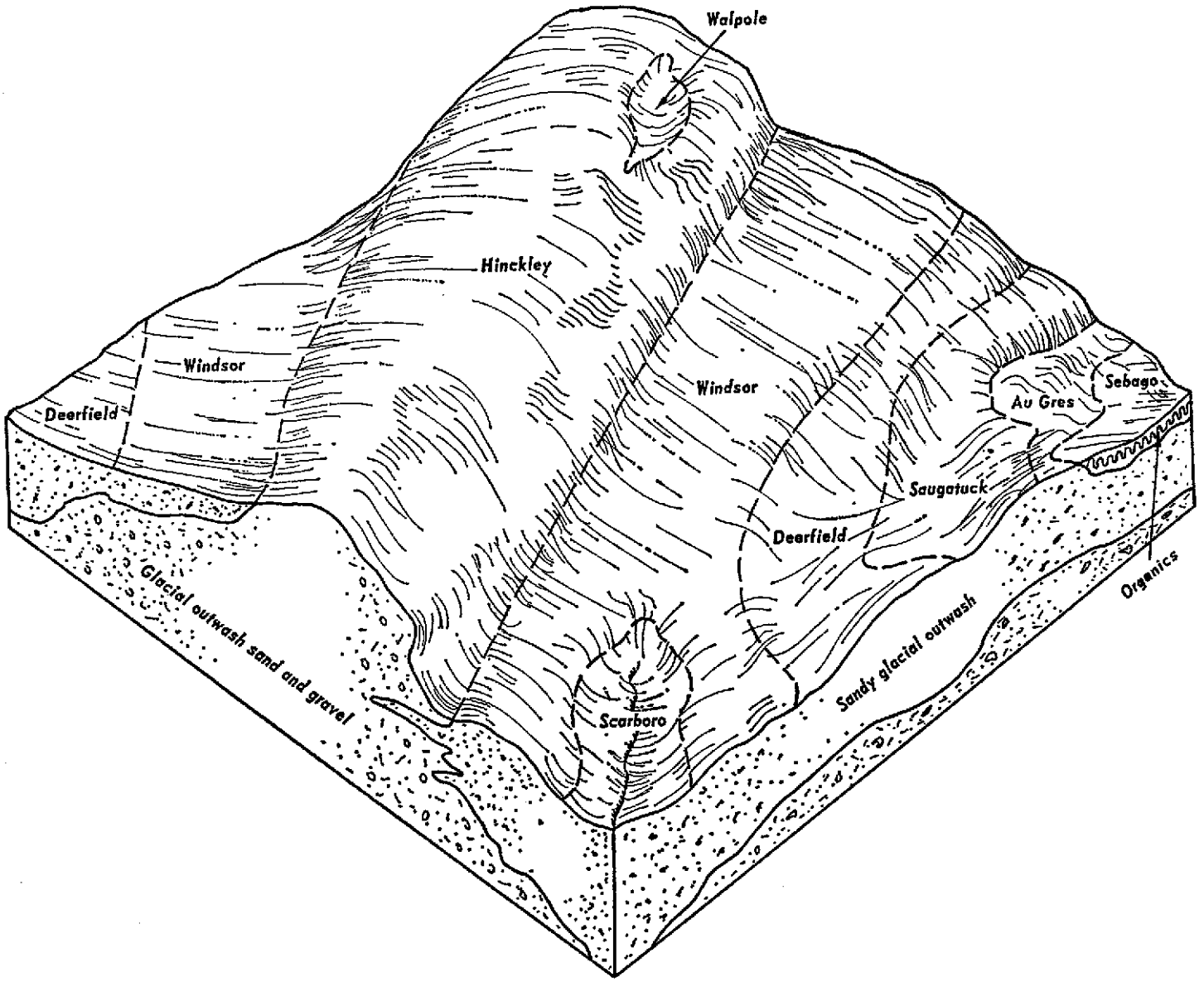

Figure 3.—Typical pattern of soils, topography, and underlying material in association 2.

3. Suffield-Buxton-Hollis Association

Deep, well-drained to somewhat poorly drained, gently sloping to steep, medium-textured soils and ridges of shallow, somewhat excessively drained, moderately coarse textured soils

This association is in the eastern and central coastal regions of the county. It consists of areas of gently sloping to rolling, marine deposited silts and clays, and many gently rolling to steep, shallow soils on ridges (fig. 4.).

Suffield soils make up about 23 percent of the association, Buxton soils about 20 percent, Hollis soils about 19 percent, and minor soils the remaining 38 percent. This association occupies about 17 percent of the county.

Suffield soils are deep, well-drained, sloping to steep soils. At a depth of 24 inches they are underlain by clay. These soils are mainly on ridges or naturally eroded drainageways. Buxton soils are deep, moderately well drained to somewhat poorly drained, and gently sloping to rolling soils that occur in areas near Suffield soils. Hollis soils are shallow and somewhat excessively drained. They are on crests of ridges that protrude through many areas of Suffield and Buxton soils.

Minor soils in this association are the Belgrade, Biddeford, Elmwood, Hartland, Melrose, Scantic, and Swanton soils. The slightly sloping Biddeford and Scantic soils are in depressional areas near the Belgrade, Buxton, Hartland, and Suffield soils.

Most of the soils in this association are in second-growth woodland, but a few areas are used for dairy farms and apple orchards. Blueberries are grown commercially on many sandy and stony areas. Use of these soils for residential purposes is increasing, particularly in

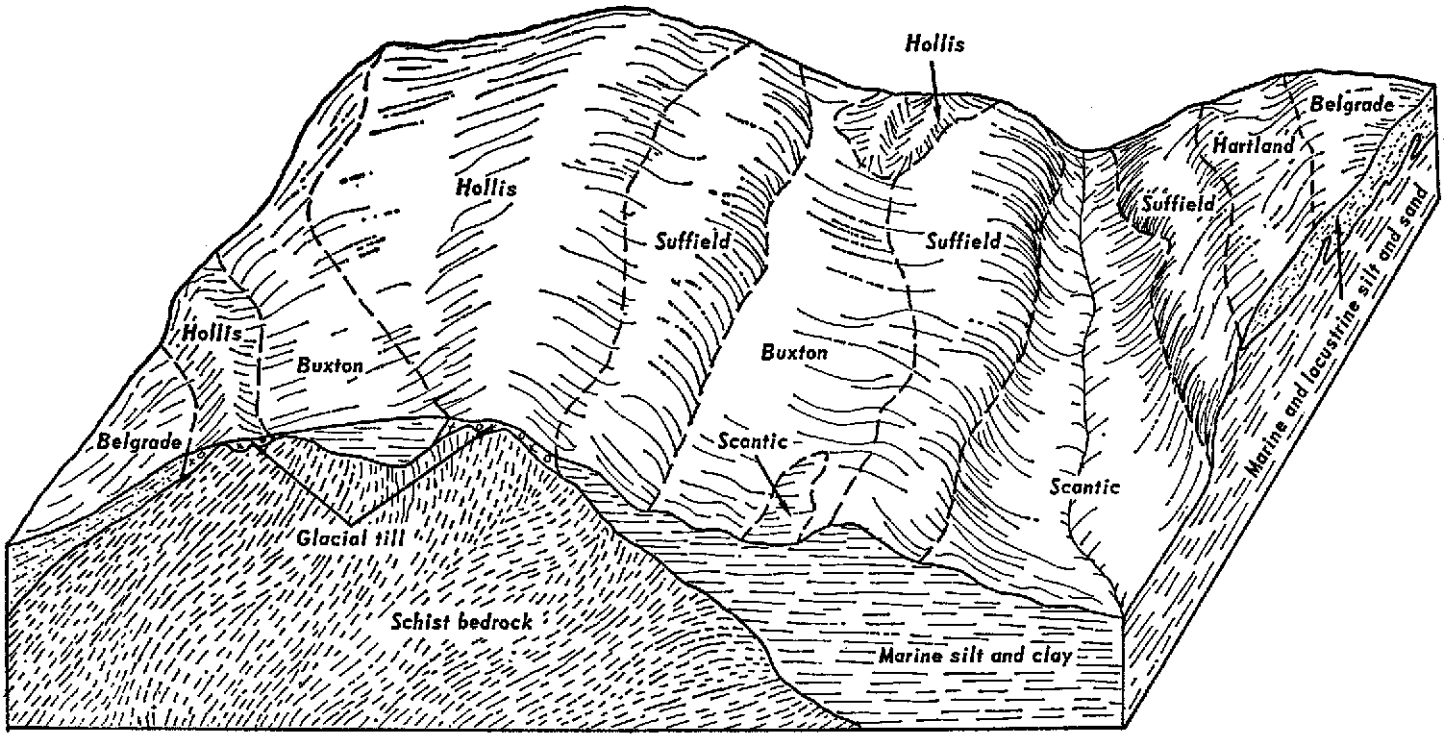

Figure 4.—**Typical pattern of soils, topography, and underlying material in association 3.**

the vicinity of large population centers. Use of the soils as recreational areas is also important.

The principal limitation of the major soils is a slow and very slow permeability and shallowness to bedrock, which adversely affects septic effluent absorption. Other limitations are low shear strength and poor trafficability, particularly in the clayey soils.

4. Scantic-Buxton-Windsor Association

Deep, poorly drained to moderately well drained, level to moderately sloping, medium-textured soils and deep, excessively drained, nearly level to steep, coarse-textured soils

This association is in the eastern part of the county. It consists of gently sloping to nearly level soils in the southern areas of the county and of gently rolling to moderately steep soils in the northern areas (fig. 5). The soils in this association formed in marine and lacustrine deposits, and a few areas have an overburden of coarse sandy material.

Scantic soils make up about 28 percent of the association, Buxton soils about 17 percent, Windsor soils about 16 percent, and minor soils the remaining 39 percent. This association occupies about 14 percent of the county.

Scantic soils are poorly drained and nearly level to level. The moderately well drained to somewhat poorly drained Buxton soils are gently sloping to moderately sloping. Windsor soils are deep, excessively drained, and nearly level to steep.

Minor soils in this association are the Biddeford, Elmwood, Hollis, Paxton, Sebago, Suffield, Swanton, and Woodbridge soils and Tidal marsh. Elmwood and Swanton soils are in areas near Windsor, Buxton, and Scantic soils. Hollis soils are in areas where bedrock is near the surface on steep slopes and on the crests of ridges. Paxton and Woodbridge soils are on high hills. Sebago soils are in bogs. Tidal marsh occurs along the Dustan and Cousins Rivers.

Most areas of the soils in this association are wooded, but many areas are used for residential or recreational developments.

The principal limitation of the major soils is slow permeability, which adversely affects septic effluent absorption. Other limitations are low shear strength and unstable trench faces.

5. Paxton-Woodbridge-Hollis Association

Deep, well drained and moderately well drained, nearly level to strongly sloping, moderately coarse textured soils and shallow, somewhat excessively drained, moderately coarse textured soils

This association is in the central part of the county. This moderately rolling soil is on low hills (fig. 6). Lakes are in many of the valleys. Small bogs are common.

Paxton soils make up about 23 percent of the association, Woodbridge soils about 22 percent, Hollis soils about 17 percent, and minor soils the remaining 38 percent. This association occupies about 10 percent of the county.

Paxton soils are deep, well-drained fine sandy loams that formed in glacial till. These soils have a very firm, compact layer at a depth of 17 to 25 inches. The moderately well drained Woodbridge soils generally are at lower elevations than Paxton soils and are less steep. They have a firm, compact layer at a depth of about 24

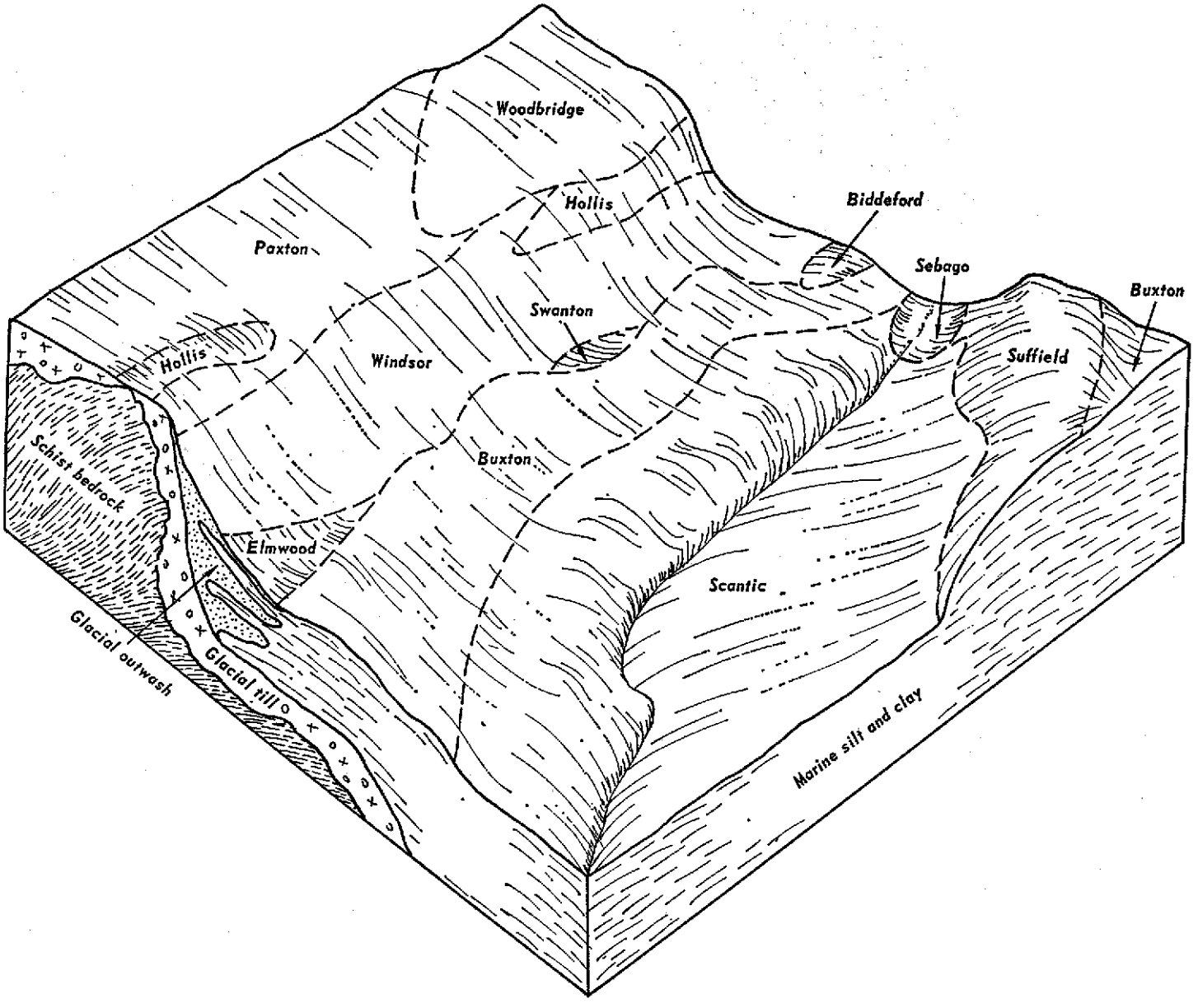

Figure 5.—**Typical pattern of soils, topography, and underlying material in association 4.**

inches. Hollis soils are somewhat excessively drained and are shallow to bedrock. They are on the crests of ridges or in areas surrounded by Paxton soils.

Minor soils in this association are the Hermon, Hinckley, Ridgebury, Scantic, and Sebago soils. Ridgebury soils formed in glacial till and occupy many of the depressional areas adjacent to Woodbridge and Paxton soils. Scantic soils are along small streams and brooks. Hermon soils formed in granitic glacial till and occupy higher elevations than the other less extensive soils, particularly in the western part of the association. Hinckley soils are in small kames, eskers, and outwash fans. They formed in very gravelly and cobbly outwash. Sebago soils are in bogs.

Most of the soils in this association are wooded. The vegetation is mixed hardwoods and softwoods. These soils are suited to orchards, dairy farms, and general farms. Paxton soils are particularly well suited to orchards.

The principal limitation of the Paxton, Ridgebury, and Woodbridge soils is a firm impervious pan that severely affects effluent absorption. Scantic soils have similar limitations for this use because of their impervious clay substratum. Hinckley soils are a good source of gravel.

6. Hollis-Windsor-Au Gres Association

Shallow, somewhat excessively drained, gently sloping to steep, moderately coarse textured soils and deep, excessively drained and somewhat poorly drained, level to steep, coarse-textured soils

This association is in the southeastern coastal area of the county. Near the coast some of the soils in this asso-

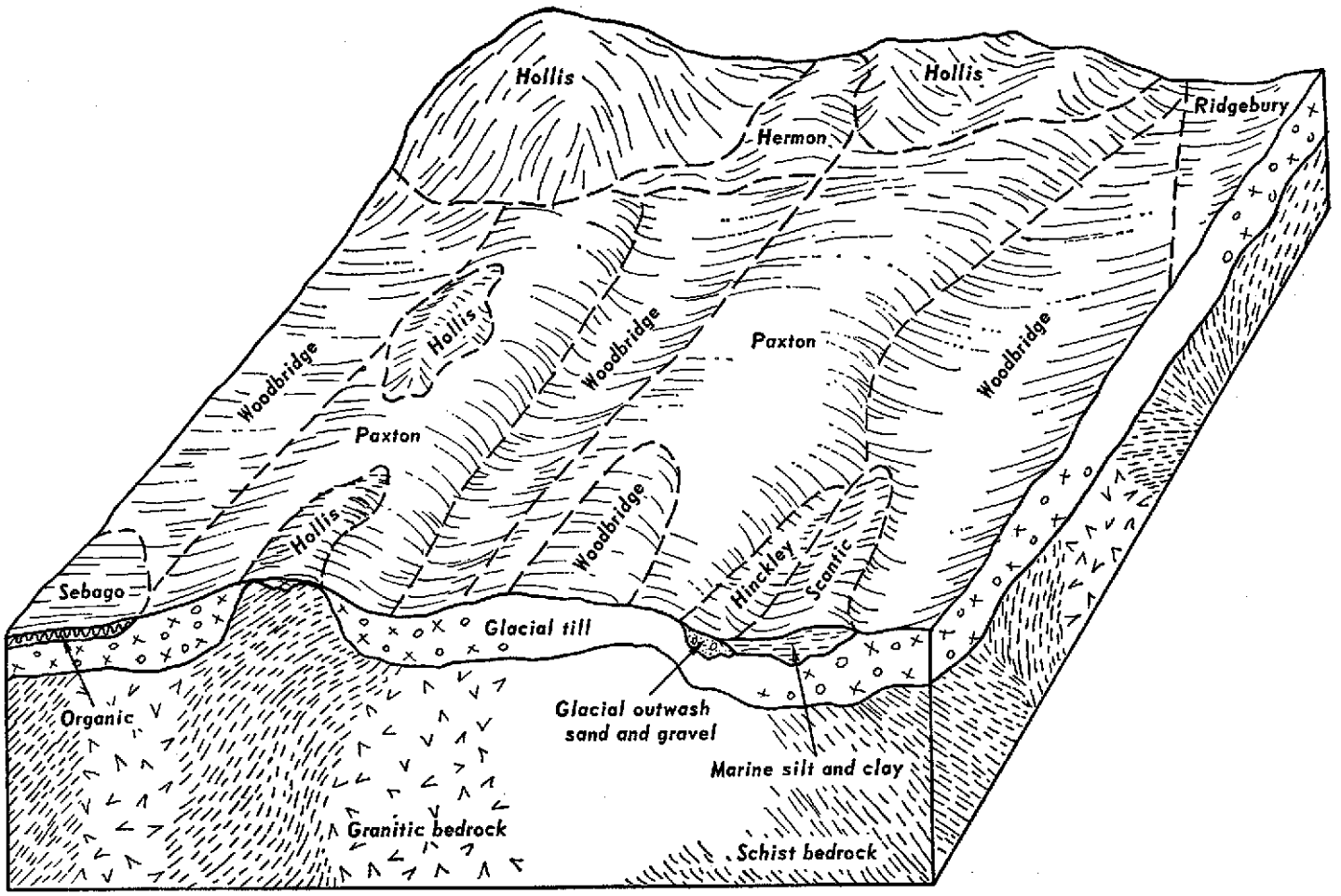

Figure 6.—**Typical pattern of soils, topography, and underlying material in association 5.**

ciation are level, others are gently rolling and shallow, and still others are steep (fig. 7). The nearly level, somewhat poorly drained soils are inland. Coastal beaches in this association, such as Crescent Beach and Scarboro Beach, are dominantly sandy for most of their length, but a few areas are bouldery and stony.

Hollis soils make up about 31 percent of the association, Windsor soils about 21 percent, Au Gres soils about 13 percent, and minor soils the remaining 35 percent. This association occupies about 8 percent of the county.

Hollis soils are shallow to bedrock and are somewhat excessively drained. They are on ridges and other higher elevations. Windsor soils are deep, sandy, and excessively drained. They generally are near Hollis soils and are the principal soils on the inland outwash plains. Au Gres soils are deep, somewhat poorly drained, and coarse textured. They formed in coarse sandy deposits and are in depressional areas.

Minor soils in this association are the Belgrade, Deerfield, Hartland, Scantic, Scarboro, Sebago, and Suffield soils and Coastal beaches and Tidal marsh. These soils are scattered throughout the county along drainageways and in upland areas. Coastal beaches are near coastal areas, and Tidal marsh is prominent along the Spurwink River.

Industrial and urban use of the soils of this association is increasing rapidly in the vicinity of Portland. Most of the soils in this association are wooded, but a few areas of Windsor and Au Gres soils are used for truck farming particularly in the vicinity of Cape Elizabeth.

The principal limitations of the major soils are shallowness to bedrock, a high water table, and rapid permeability in the subsurface layer, which adversely affects effluent absorption.

Descriptions of the Soils

This section describes the soil series and mapping units in Cumberland County. Each soil series is described in considerable detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material.

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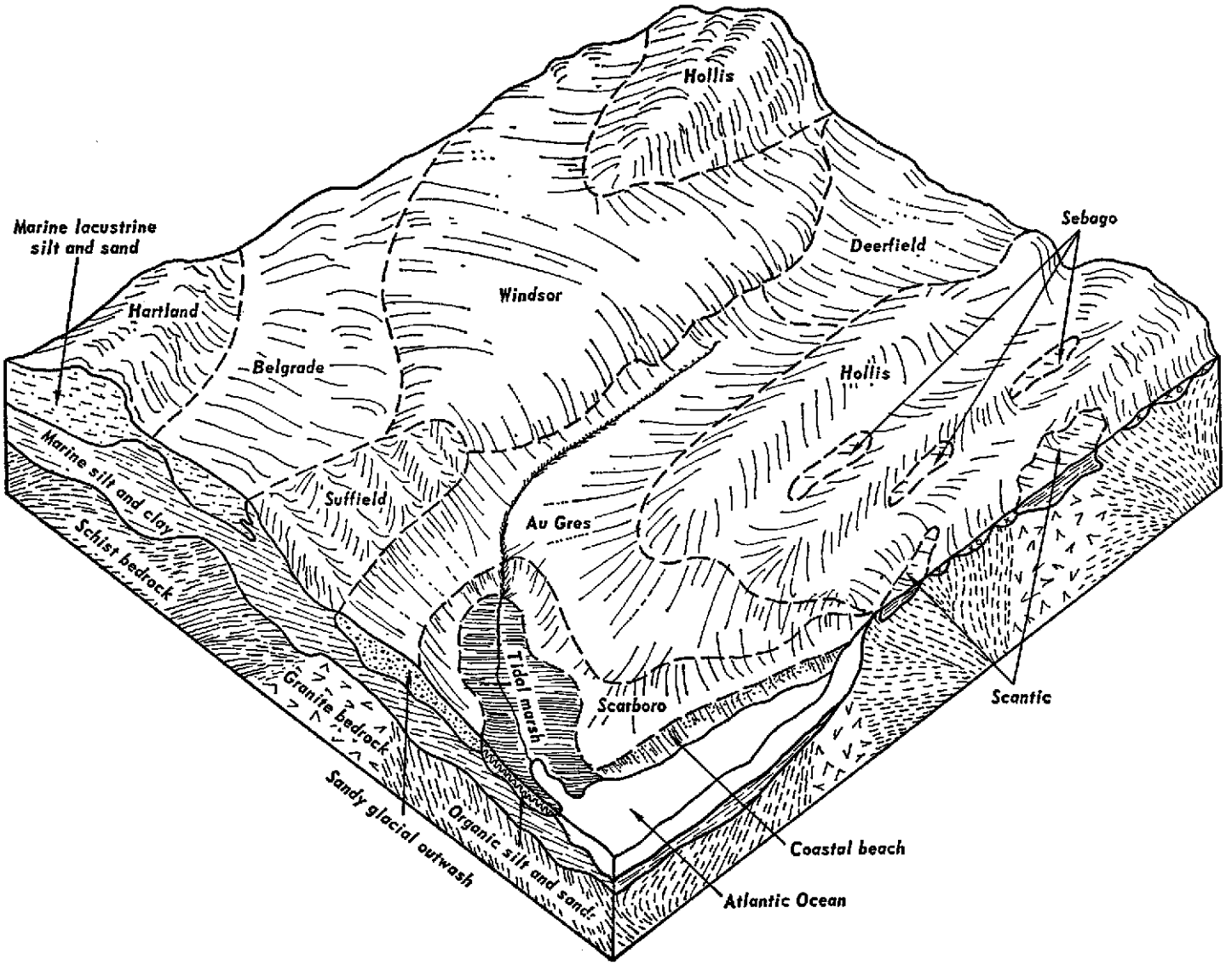

Figure 7.—**Typical pattern of soils, topography, and underlying material in association 6.**

Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of soils. Unless it is otherwise stated, the color and consistence described are those of a moist soil.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Dune land, for example, does not belong to a soil series, but nevertheless is listed in alphabetic order along with the soil series.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit are the capability unit, woodland group, and wildlife group in which the mapping unit has been placed.

The description of each mapping unit contains suggestions for management. Additional information relating to the management of woodland can be found in the subsection "Use of the Soils for Woodland" (table 3), and additional information relating to the management of wildlife habitat can be found in the subsection "Use of the Soils for Wildlife Habitat" (table 4).

The approximate acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*12*).[2]

A given soil series in this county may be identified by a

[2] Italic numbers in parentheses refer to Literature Cited, p. 92.

different name in a recently published soil survey of an adjacent county. Such differences in name result from changes in the concepts of soil classification that have occurred since publication. The characteristics of the soil series described in this county are considered to be within the range defined for that series. In those instances where a soil series has one or more features outside the defined range, the differences are explained.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Au Gres loamy sand	6,800	1.2	Limerick-Saco silt loams	3,875	0.7
Belgrade very fine sandy loam, 0 to 8 percent slopes	12,550	2.2	Lyman fine sandy loam, 3 to 8 percent slopes	1,275	.2
Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded	1,635	.3	Lyman fine sandy loam, 8 to 15 percent slopes	1,080	.2
Biddeford silt loam	1,330	.2	Lyman very rocky fine sandy loam, 3 to 8 percent slopes	1,025	.2
Buxton silt loam, 3 to 8 percent slopes	31,410	5.6	Lyman very rocky fine sandy loam, 8 to 20 percent slopes	5,105	.9
Buxton silt loam, 8 to 15 percent slopes, eroded	5,055	.9	Lyman very rocky fine sandy loam, 20 to 45 percent slopes	1,395	.2
Canaan sandy loam, 3 to 8 percent slopes	940	.2	Made land	450	.1
Canaan sandy loam, 8 to 15 percent slopes	1,370	.2	Melrose fine sandy loam, 8 to 15 percent slopes	415	.1
Canaan very rocky sandy loam, 3 to 8 percent slopes	360	.1	Merrimac fine sandy loam, 3 to 8 percent slopes	1,095	.2
Canaan very rocky sandy loam, 8 to 20 percent slopes	5,820	1.0	Merrimac fine sandy loam, 8 to 15 percent slopes	230	(1)
Canaan very rocky sandy loam, 20 to 60 percent slopes	1,520	.3	Ondawa fine sandy loam	2,145	.4
Coastal beaches	580	.1	Paxton fine sandy loam, 3 to 8 percent slopes	10,460	1.9
Cut and fill land	1,750	.3	Paxton fine sandy loam, 8 to 15 percent slopes	7,665	1.4
Deerfield loamy sand, 0 to 3 percent slopes	3,580	.6	Paxton fine sandy loam, 15 to 25 percent slopes	985	.2
Deerfield loamy sand, 3 to 8 percent slopes	16,520	2.9	Paxton very stony fine sandy loam, 3 to 8 percent slopes	4,200	.7
Dune land	575	.1	Paxton very stony fine sandy loam, 8 to 15 percent slopes	7,130	1.3
Elmwood fine sandy loam, 0 to 8 percent slopes	9,880	1.7	Paxton very stony fine sandy loam, 15 to 25 percent slopes	1,725	.3
Gravel pits	2,020	.4	Peru fine sandy loam, 0 to 8 percent slopes	6,465	1.2
Hartland very fine sandy loam, 3 to 8 percent slopes	1,150	.2	Peru fine sandy loam, 8 to 15 percent slopes	680	.1
Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	3,140	.6	Peru very stony fine sandy loam, 0 to 8 percent slopes	14,445	2.6
Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	1,310	.2	Peru very stony fine sandy loam, 8 to 15 percent slopes	2,190	.4
Hermon sandy loam, 3 to 8 percent slopes	12,440	2.2	Podunk fine sandy loam	2,850	.5
Hermon sandy loam, 8 to 15 percent slopes	11,335	2.0	Ridgebury fine sandy loam, 0 to 3 percent slopes	5,370	1.0
Hermon sandy loam, 15 to 25 percent slopes	2,360	.4	Ridgebury very stony fine sandy loam, 0 to 3 percent slopes	6,695	1.2
Hermon very stony sandy loam, 3 to 8 percent slopes	17,855	3.2	Rock land	1,025	.2
Hermon very stony sandy loam, 8 to 15 percent slopes	43,975	7.8	Rumney fine sandy loam	1,430	.2
Hermon very stony sandy loam, 15 to 30 percent slopes	12,475	2.2	Saugatuck loamy sand	2,845	.5
Hermon extremely stony sandy loam, 8 to 20 percent slopes	2,155	.4	Scantic silt loam	33,495	5.9
Hermon extremely stony sandy loam, 20 to 60 percent slopes	1,815	.3	Scarboro sandy loam	2,840	.5
Hinckley gravelly sandy loam, 3 to 8 percent slopes	20,670	3.7	Sebago mucky peat	13,200	2.3
Hinckley gravelly sandy loam, 8 to 15 percent slopes	6,705	1.2	Suffield silt loam, 8 to 15 percent slopes, eroded	9,220	1.6
Hinckley gravelly sandy loam, 15 to 25 percent slopes	2,405	.4	Suffield silt loam, 15 to 25 percent slopes, eroded	5,640	1.0
Hinckley-Suffield complex, 3 to 8 percent slopes	490	.1	Suffield silt loam, 25 to 45 percent slopes, eroded	11,110	2.0
Hinckley-Suffield complex, 8 to 15 percent slopes	985	.2	Swanton fine sandy loam	7,725	1.4
Hinckley-Suffield complex, 15 to 25 percent slopes	385	.1	Tidal marsh	5,160	.9
Hollis fine sandy loam, 3 to 8 percent slopes	14,260	2.5	Walpole fine sandy loam	6,680	1.2
Hollis fine sandy loam, 8 to 15 percent slopes	12,060	2.1	Whately fine sandy loam	755	.1
Hollis fine sandy loam, 15 to 25 percent slopes	1,395	.2	Whitman fine sandy loam	860	.2
Hollis very rocky fine sandy loam, 3 to 8 percent slopes	5,650	1.0	Windsor loamy sand, 0 to 8 percent slopes	39,025	6.9
Hollis very rocky fine sandy loam, 8 to 20 percent slopes	14,085	2.5	Windsor loamy sand, 8 to 15 percent slopes	9,800	1.7
Hollis very rocky fine sandy loam, 20 to 35 percent slopes	4,495	.8	Windsor loamy sand, 15 to 30 percent slopes	5,530	1.0
			Woodbridge fine sandy loam, 0 to 8 percent slopes	8,470	1.5
			Woodbridge fine sandy loam, 8 to 15 percent slopes	465	.1
			Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	11,505	2.0
			Woodbridge very stony fine sandy loam, 8 to 15 percent slopes	820	.2
			Total	563,840	100.0

[1] Less than 0.05 percent.

Au Gres Series

The Au Gres series consists of deep, nearly level, somewhat poorly drained soils. These coarse-textured soils formed in glacial outwash deposits. They are primarily on old deltas in coastal areas of the county.

A representative profile of an Au Gres soil has a surface layer of black loamy sand about 3 inches thick. Below this layer is about 7 inches of light brownish-gray, loose loamy sand that has strong-brown mottles. The upper 6 inches of the subsoil is dark reddish-brown, friable loamy sand that has light olive-brown mottles. The lower 16 inches of the subsoil is reddish-yellow, loose loamy sand that has light olive-brown and yellowish-brown mottles. The substratum, at a depth of 32 inches, is light yellowish-brown, loose sand that has light olive-brown mottles. The water table is at a depth of 1 foot in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more.

Most areas of these soils are wooded. Common species are white spruce, black spruce, balsam fir, white pine, American elm, red maple, and speckled alder, as well as heath plants, sedges, and ferns. Little of this soil has been used for farming.

Representative profile of Au Gres loamy sand, 0.3 mile east of the junction of Old Bath Road and 150 feet south of Bath Road in Brunswick Township:

A1—0 to 3 inches, black (10YR 2/1) loamy sand; weak, fine, granular structure; friable when moist; many roots; strongly acid; clear, wavy boundary.

A2—3 to 10 inches, light brownish-gray (10YR 6/2) loamy sand; many, coarse, distinct, strong-brown (7.5YR 5/6) mottles; single grain; loose when moist; many roots; strongly acid; clear, irregular boundary.

B21hir—10 to 16 inches, dark reddish-brown (5YR 3/2) loamy sand; many, coarse, distinct, light olive-brown (2.5Y 5/4) mottles; weak, coarse, subangular blocky structure; friable when moist; few roots; strongly acid; abrupt, smooth boundary.

B22ir—16 to 32 inches, reddish-yellow (7.5YR 6/6) loamy sand; many, coarse, distinct, light olive-brown (2.5Y 5/4) and yellowish-brown (10YR 5/6) mottles; single grain; loose when moist; a few roots; strongly acid; gradual, wavy boundary.

C—32 to 60 inches, light yellowish-brown (10YR 6/4) sand; many, coarse, distinct, light olive-brown (2.5Y 5/6) mottles; single grain; loose when moist; 10 percent gravel; strongly acid.

The profile ranges from loamy sand to sand. The A1 horizon is black (10YR 2/1) to dark grayish brown (10YR 4/2). In the A2 horizon hue is 10YR or 7.5YR, value ranges from 5 to 7, and chroma is 1 or 2. In the B21hir horizon hue is 7.5YR or 5YR, and value and chroma range from 2 to 4. In the B22ir horizon, hue is 7.5YR or 5YR, value ranges from 4 to 6, and chroma is 4 to 6. The content of gravel in the C horizon ranges from 5 to 15 percent.

Associated with Au Gres soils in the landscape are Deerfield, Saugatuck, Scarboro, and Windsor soils. Au Gres soils are somewhat poorly drained. Windsor soils are excessively drained, Scarboro soils are very poorly drained, and Deerfield soils are moderately well drained. Au Gres soils lack the continuous cemented ortstein of Saugatuck soils.

Au Gres loamy sand (Au).—This is the only Au Gres soil mapped in the county. It is in depressions. Included in mapping are small areas of Windsor, Saugatuck, Deerfield, and Walpole soils. Also included are a few areas of a soil that has a layer of clay at a depth of 5 feet.

Runoff is slow. Permeability is rapid, but the seasonal high water table affects internal drainage during periods of heavy precipitation.

This soil can be used for hay and pasture if water-tolerant plants are grown. Management practices to improve drainage are also needed. Wetness and the inability of this soil to retain fertilizers severely limit its use for cultivated crops. Limitations generally are moderate to severe for woodland use. White pine and white spruce are suitable trees for planting. Because of wetness and a high water table, this soil has very severe limitations for urban and recreational purposes. Capability unit IVw–5; woodland group 4w1; wildlife group 3.

Belgrade Series

The Belgrade series consists of deep, moderately well drained, nearly level to undulating, medium-textured soils. These soils formed in marine and lacustrine sediment. They are principally on terraces in the coastal areas of the county.

A representative profile of Belgrade soil in a cultivated area has a surface layer of dark-brown very fine sandy loam 9 inches thick. The upper 9 inches of the subsoil is brown, friable very fine sandy loam. The lower 10 inches of the subsoil is olive, friable silt loam that has olive-yellow and dark yellowish-brown mottles. At a depth of 28 inches, the substratum is alternating bands, about one-fourth inch in thickness, of olive, friable silt and light olive-brown, friable very fine sand that has a few dark yellowish-brown mottles.

A water table is at a depth of 2½ feet in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more. Permeability is moderately slow to moderate, and available water capacity is high.

These soils are used mainly for farming, but some areas are wooded. Common species are white pine, white spruce, and northern hardwoods.

Representative profile of Belgrade very fine sandy loam, 0 to 8 percent slopes, 0.4 mile west of Lawrence Road across from Chandler River on the south side of dirt road in Pownal Township:

Ap—0 to 9 inches, dark-brown (10YR 4/3) very fine sandy loam; weak, medium, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

B21—9 to 18 inches, brown (7.5YR 4/4) very fine sandy loam; weak, medium, subangular blocky structure; friable when moist; common roots; strongly acid; clear, smooth boundary.

B22—18 to 28 inches, olive (5Y 5/3) silt loam; common, medium, distinct, olive-yellow (2.5Y 6/6) and dark yellowish-brown (10YR 4/4) mottles; massive; friable when moist; a few roots; strongly acid.

C—28 to 60 inches, olive (5Y 4/3) silt varves and light olive-brown (2.5Y 5/6) very fine sand varves; a few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, medium, platy structure; friable when moist; medium acid.

The solum ranges from 20 to 30 inches in thickness. Reaction ranges from strongly acid to medium acid in the solum. The solum ranges from silt loam to very fine sandy loam.

In a few areas that have not been cultivated, these soils have an A1 horizon, about 6 inches thick, that is slightly darker than the Ap horizon. The B21 horizon is slightly thicker in these areas. In the B21 horizon hue is 7.5YR or 10YR, value is 4 or 5, and chroma ranges from 3 to 6.

Associated with Belgrade soils in the landscape are Buxton, Elmwood, Hartland, Melrose, Scantic, and Suffield soils. Belgrade soils are similar to these soils, but Hartland soils are well drained. Belgrade soils are silt loam or very fine sandy loam, but the well-drained Suffield soils, moderately well drained to somewhat poorly drained Buxton soils, and poorly drained Scantic soils are dominantly fine textured throughout. Belgrade soils are silt loam or very fine sandy loam throughout, but the well-drained Melrose soils and moderately well drained Elmwood soils are principally fine sandy loam over a fine-textured substratum.

Belgrade very fine sandy loam, 0 to 8 percent slopes (BgB).—This soil has the profile described as representative of the series. It is on terraces adjacent to streams, rivers, and natural drainageways. Runoff is slow. Fertility is low. Included in mapping are a few small areas of Suffield soils, Buxton soils, and shallow soils. Also included are a few very small, very wet areas.

This soil can be used for hay, pasture, row crops, and woodland. Artificial drainage is needed because of wetness during spring and periods of heavy precipitation. Crops respond well to applications of lime and fertilizer. For woodland use white pine, white spruce, and red pine are suitable for planting. This soil has severe limitations for many community and recreational uses because of wetness and a seasonal high water table. Capability unit IIw-7; woodland group 3o1; wildlife group 2.

Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded (BgC2).—This soil has a profile similar to the one described as representative of the series, except that its surface layer is thinner. This soil is on the sides of terraces adjacent to drainageways, streams, and rivers. Included in mapping are small areas of Suffield soils, Buxton soils, and shallow soils.

This soil can be used for hay, pasture, row crops, and woodland. Artificial drainage is needed because of wetness in spring and during periods of heavy precipitation. If this soil is cultivated, erosion is a hazard. Crops respond well to applications of lime and fertilizer. For woodland use, white pine, white spruce, and red pine are suitable for planting. Limitations are severe on this soil for many community and recreational uses because of wetness and a seasonal high water table. Capability unit IIIew-7; woodland group 3r1; wildlife group 1.

Biddeford Series

The Biddeford series consists of deep, nearly level, very poorly drained, fine-textured soils that have a fine-textured subsoil. These soils formed in marine and lacustrine sediment. They are in depressions in the central lowland and in coastal areas of the county.

A representative profile of a Biddeford soil has about a 1-inch layer of undecomposed leaves and twigs. Below this is a very dark brown organic layer, about 12 inches thick, that is underlain by a surface layer of gray silt loam 4 inches thick. Below this is an olive-gray and dark-gray, firm silty clay subsoil, 29 inches thick, that has dark yellowish-brown, grayish-brown, light olive-brown, dark-brown, gray, and olive-brown mottles. The substratum, at a depth of 33 inches, is gray, firm silty clay loam that has dark-brown, gray, and olive-brown mottles.

The water table is at a depth of 1 foot most of the year. Depth to bedrock is 5 feet or more.

Most areas of Biddeford soils are wooded. A common species is speckled alder. Other vegetation is sedges and marsh grasses.

Representative profile of Biddeford silt loam, 0.5 mile north of Oak Hill and 0.25 mile north of Scarboro High School, 57 feet west of State Route 114, in Scarboro Township:

O1—13 inches to 12, undecomposed leaves and twigs.

O2—12 inches to 0, very dark brown (10YR 2/2) hemic soil material; weak, very fine, granular structure; friable when moist; common roots; strongly acid; clear, wavy boundary.

A2g—0 to 4 inches, gray (5Y 5/1) silt loam; a few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles mainly around root hairs; moderate, fine, granular structure; friable when moist; a few roots; slightly acid; clear, wavy boundary.

B21g—4 to 10 inches, olive-gray (5Y 4/2) silty clay; many, fine to medium, distinct, dark yellowish-brown (10YR 4/4) and grayish-brown (2.5Y 5/2) mottles; moderate, medium to coarse, prismatic structure, breaking to weak, medium, angular blocky structure; thin, continuous, olive-gray (5Y 5/2) dull films on 40 percent of ped faces; gray (5Y 6/1) prism faces, 1 to 2 millimeters thick; firm when moist, sticky and plastic when wet; a few to many roots, mainly along prism faces; a few fine to very fine pores; neutral; clear, wavy boundary.

B22g—10 to 23 inches, dark-gray (5Y 4/1) silty clay; common, fine, distinct, light olive-brown (2.5Y 5/4) and dark yellowish-brown (10YR 4/4) mottles; moderate, medium, prismatic structure, that parts to weak, medium, angular blocky structure; firm when moist, sticky and plastic when wet; thin, continuous, gray (5Y 5/1) films on prism faces; thin, dark-gray (5Y 4/1) micaceous films on 40 percent of ped faces; a few fine pores; light-gray (5Y 7/1) coating and a few pore walls; neutral; gradual, smooth boundary.

B3g—23 to 33 inches, olive-gray (5Y 4/2) silty clay; many, fine, distinct, dark-brown (7.5YR 4/4), gray (5Y 5/1), and olive-brown (2.5Y 4/4) mottles; weak, coarse, prismatic structure, that parts to moderate, fine and very fine, angular blocky structure; firm when moist, sticky and plastic when wet; gray (5Y 5/1) thick frosty lining in few pores; very fine dark-brown (7.5YR 4/4) streaks along contact zone between peds; very fine continuous films on a few peds; a few very fine pores; mildly alkaline; gradual, smooth boundary.

Cg—33 to 60 inches, gray (5Y 5/1) silty clay loam; many, fine to medium, distinct, dark-brown (7.5YR 4/4), gray (N 6/0), and olive-brown (2.5Y 4/4) mottles and a few, fine, black (N 2/0) coatings; weak, medium, platy structure, that parts to weak, very fine, subangular blocky structure; firm when moist, sticky and plastic when wet; pores absent or not evident; very thin dull films on 20 percent of ped faces; a few pores; mildly alkaline.

The solum ranges from 20 to 40 inches in thickness. In the A2g horizon hue is 5Y, 5BG, and 5GY; value ranges from 4 to 6; and chroma ranges from 0 to 2. The A2g horizon ranges from silt loam to clay loam. The A2g horizon ranges from medium acid to slightly acid in reaction.

In the B21g horizon hue is 5Y or 5GY, value ranges from 4 to 6, and chroma is 1 or 2. The B21g horizon ranges from silty clay loam to clay. The structure in this horizon ranges from massive to weak or moderate, fine to coarse, prismatic or blocky. Reaction ranges from medium acid to neutral. The mottles in the B21g horizon range from a few to many and from distinct to prominent. In the B22g horizon hue is 5Y or 5GY, value is 4 or 5, and chroma is 1 or less. The B22g horizon ranges from silty clay to clay. The weak structure in this horizon ranges from medium to coarse, prismatic to blocky. Reaction ranges from neutral to slightly alkaline. In the B3g horizon hue is 5Y or 5GY, value is 4 and 5, and chroma is 1 or 2. The B3g horizon ranges from clay loam to

clay. Reaction in the B3g horizon ranges from neutral to mildly alkaline.

In the Cg horizon hue is 5Y, 5BG, 5G, or 5B; value is 4 or 5; and chroma is 1 or less. The Cg horizon ranges from silty clay loam to clay. In this horizon structure ranges from massive to weak, medium, platy that generally breaks into weak and very weak, very fine, blocky. The mottles range from common to many, fine to medium, and distinct to prominent. This horizon ranges from neutral to mildly alkaline in reaction.

Associated with Biddeford soils in the landscape are Buxton, Scantic, and Suffield soils. Biddeford soils are similar to these soils, but Suffield soils are well drained, Buxton soils are moderately well drained, and Scantic soils are poorly drained.

Biddeford silt loam (Bo).—This is the only Biddeford soil mapped in the county. It is in depressional areas adjacent to or surrounded by Scantic soils and in drainageways near steeper soils that are better drained. Runoff is very slow or ponded and permeability is very slow. Included in mapping are small areas of poorly drained Scantic soils and areas of soils that are sandy throughout.

This soil is too wet for most kinds of farming, but it is suitable for use as pasture if water-tolerant plants are grown. It is not suitable for the production of timber for commercial purposes. Limitations are severe on this soil for community and recreational uses because of wetness and a high water table. This soil is suitable for ponds and shallow-water impoundments for waterfowl and for use as habitat for other wildlife. Capability unit VIw–7; woodland group not suited to growing trees for commercial purposes; wildlife group 4.

Buxton Series

The Buxton series consists of deep, moderately well drained to somewhat poorly drained, gently sloping to moderately sloping, medium-textured soils. These soils formed in silty and clayey marine lacustrine sediment in the central lowland and coastal areas of the county. They are on terraces and plains.

A representative profile of a Buxton soil in a cultivated area has a layer of dark-brown silt loam, 9 inches thick, that overlies a layer of yellowish-brown, friable silt loam. The next 4 inches is light olive-gray, friable silty clay loam. Below this is 22 inches of olive-gray to gray, firm silty clay that has gray, olive, olive-brown, and light olive-brown mottles. The underlying material, at a depth of 38 inches, is olive-gray silty clay that has a few light olive-brown mottles.

The water table is at a depth of 1 to 2½ feet in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more. These soils have high available water capacity. Permeability is moderately slow to slow above the fine-textured layer and slow to very slow within it.

Most of the acreage of Buxton soils is used for farming, but many areas are wooded. Common species are white pine, yellow birch, gray birch, ground juniper, and poplar.

Representative profile of Buxton silt loam, 3 to 8 percent slopes, 2.75 miles south-southeast of North Scarboro on macadam road connecting Holmes Road with Beech Ridge Road, 80 feet to 45° east azimuth from N.E.T.&T. Co. pole #8, 70 feet from center of road in Scarboro Township:

Ap—0 to 9 inches, dark-brown (10YR 4/3) silt loam; moderate, fine, granular structure; friable when moist; common roots; strongly acid; abrupt, smooth boundary.

B2—9 to 12 inches, yellowish-brown (10YR 5/6) silt loam; moderate, fine, granular structure; friable when moist; common roots; strongly acid; abrupt, smooth boundary.

A'2—12 to 16 inches, light olive-gray (5Y 6/2) silty clay loam; moderate, fine, subangular blocky structure; friable when moist; some tonguing; medium acid; abrupt, wavy boundary.

B'21—16 to 21 inches, olive-gray (5Y 5/2) silty clay; a few, fine, faint, gray (5Y 5/1) and olive (5Y 5/6) mottles; moderate, medium, blocky structure; slightly firm; tops of prisms in this horizon; a few fine manganese stains on peds; medium acid; clear, smooth boundary.

B'22—21 to 28 inches, olive (5Y 4/3) silty clay; common, fine, distinct, olive-brown (2.5Y 4/4) and gray (5Y 5/1) mottles; moderate to strong, coarse, prismatic structure that parts to moderate, medium and coarse, subangular blocky structure; firm when moist, very sticky when wet; thick, continuous, olive-gray (5Y 5/2) coating on prism faces; a few, thin, black manganese coats on faces of peds; slightly acid; gradual, smooth boundary.

B'3—28 to 38 inches, olive (5Y 4/3) silty clay; common, fine, distinct, light olive-brown (2.5Y 5/6) mottles; moderate to strong, very coarse, prismatic structure; firm when moist, very sticky when wet; thick, continuous, gray (5Y 5/1) coatings on prism faces; a few, thin, black manganese films on faces of peds; slightly acid; abrupt, smooth boundary.

C—38 to 60 inches, olive-gray (5Y 4/2) silty clay; a few, fine, distinct, light olive-brown (2.5Y 5/6) mottles; weak, coarse, blocky structure becoming massive in lower part; firm when moist, very sticky when wet; thick, continuous, gray (5Y 5/1) films on ped faces and in some pores; some, thin, very dusky red (2.5YR 2/2) manganese coats; slightly acid to neutral.

The solum ranges from 24 to 50 inches in thickness. Depth to mottling ranges from 15 to 24 inches. The solum ranges from very strongly acid to neutral in reaction, and the C horizon ranges from slightly acid to neutral in reaction.

Associated with Buxton soils in the landscape are Hartland, Elmwood, Melrose, Suffield, Scantic, Biddeford, and Hollis soils. Buxton soils are similar to these soils, but Hartland and Suffield soils are well drained, Scantic soils are poorly drained, and Biddeford soils are very poorly drained. The subsoil of Buxton soil is finer textured than that of Hartland soils. Also, Hollis soils are shallow and Melrose and Elmwood soils are fine sandy loam over silty clay.

Buxton silt loam, 3 to 8 percent slopes (BuB).—This soil has the profile described as representative of the series. It is on terraces adjacent to natural drainageways, streams and rivers, and on plains. Included in mapping are small areas of a soil that has a few large stones or boulders on the surface and areas of a soil that has a thinner surface layer. Also included are small areas of Hartland, Hollis, Scantic, and Suffield soils.

This soil is likely to become cloddy if cultivated when wet, and it is very hard when dry. During periods of heavy rainfall, this soil is subject to ponding in places. This Buxton soil can be used for hay, pasture, row crops, or woodland. White pines and white spruce are suitable for planting. Limitations are severe on this soil for community and recreational uses because of a seasonal high water table, seasonal wetness, and slow to very slow permeability. Capability unit IIw–7; woodland group 4o1; wildlife group 2.

Buxton silt loam, 8 to 15 percent slopes, eroded (BuC2).—This soil is on the sides of terraces adjacent to

drainageways, streams, and rivers. Above a depth of 12 inches, its layers are thinner and lighter than those in the profile described as representative of the series, but the two profiles otherwise are similar. Included in mapping are small areas of Hartland, Scantic, and Suffield soils.

This Buxton soil is likely to be cloddy if cultivated when wet, and it is very hard when dry. This soil is suited to hay, pasture, row crops, or woodland. If it is used for row crops or as woodland, the hazard of erosion is high. For woodland use white pine and white spruce are suitable for planting, but the hazard of erosion is moderate, and the equipment limitations are moderate. A seasonal high water table, seasonal wetness, and slow to very slow permeability severely limit the use of this soil for many community and recreational developments. Capability unit IIIew–7; woodland group 5c1; wildlife group 1.

Canaan Series

The Canaan series consists of shallow, somewhat excessively drained, gently sloping to very steep, moderately coarse textured soils that have few to many rock outcrops. These soils formed in granitic glacial till. They are on uplands in the western and northwestern parts of the county.

A representative profile of a Canaan soil in a wooded area has a layer of organic litter, about 3 inches thick, that overlies a surface layer of gray sandy loam 4 inches thick. The upper 8 inches of the subsoil is dark reddish-brown to strong-brown, friable sandy loam. The lower 6 inches of the subsoil is yellowish-brown, friable gravelly sandy loam. Below a depth of 18 inches is granitic bedrock.

Depth to bedrock is 12 to 18 inches. Permeability is moderately rapid in these soils. Available water capacity is low.

A few areas of Canaan soils are used for farming, but most areas are wooded. Common species are white pine, balsam fir, and northern hardwoods.

Representative profile of Canaan sandy loam, 8 to 15 percent slopes, along State Route 124 in Sebago Township:

O1—3 inches to 2, recent accumulation of hardwood and softwood leaves.
O2—2 inches to 0, partially decomposed leaves.
A2—0 to 4 inches, gray (5YR 5/1) sandy loam; weak, very fine, granular structure; friable when moist; many roots; very strongly acid; abrupt, wavy boundary.
B21h—4 to 5 inches, dark reddish-brown (2.5YR 3/4) sandy loam; weak, fine, granular structure; friable when moist; many roots; very strongly acid; abrupt, broken boundary.
B22ir—5 to 12 inches, strong-brown (7.5YR 5/6) sandy loam; weak, very fine, granular structure; friable when moist; common roots; very strongly acid; abrupt, wavy boundary.
B23—12 to 18 inches, yellowish-brown (10YR 5/6) gravelly sandy loam; weak, very fine, granular structure; friable when moist; common roots; 20 percent coarse fragments; strongly acid; abrupt, wavy boundary.
R—18 inches, granitic bedrock.

The solum ranges from 9 to 18 inches in thickness. Reaction ranges from very strongly acid to medium acid throughout the profile.

The content of coarse fragments ranges from 0 to 25 percent in the B21h, B22ir, and B23 horizons. In the B21h horizon hue is 2.5YR or 5YR, value is 1 to 4, and chroma is 3 to 6. In the B22ir horizon hue is 2.5YR to 7.5YR, value is 3 to 5, and chroma is 4 to 6.

Associated with Canaan soils in the landscape are Hermon, Hollis, Peru, Ridgebury, and Whitman soils. Canaan soils have about 2 percent organic matter in the B21h horizon and have a mean annual soil temperature of less than 47° F., but Hollis soils have less than 2 percent organic matter in the B21h horizon and have a mean annual soil temperature of more than 47° F. Hermon soils are deep, and Peru soils are deep and moderately well drained. The deep Ridgebury soils are poorly drained, and Whitman soils are very poorly drained.

Canaan sandy loam, 3 to 8 percent slopes (CaB).—This soil is on the crests of hills and ridges. Runoff is slow, and available water capacity is low. Included in mapping are small areas of Hermon and Peru soils.

This Canaan soil is suitable for hay, pasture, row crops, or woodland. If it is cultivated, erosion is a hazard. This soil does not respond well to fertilizer, and it becomes droughty during dry periods. For woodland, white spruce and white pine are suitable for planting, but seedling mortality is severe, and the windthrow hazard is moderate because of shallowness to bedrock. Also, shallowness to bedrock severely limits the use of this soil for community and recreational developments. Capability unit IIIe–1; woodland group 4d1; wildlife group 6.

Canaan sandy loam, 8 to 15 percent slopes (CaC).—This soil has the profile described as representative of the series. It is on the middle and upper parts of hills. Runoff is medium to rapid on this soil. Available water capacity is low. Included in mapping are small areas of Hermon and Peru soils. Also included are a few areas that have stones on the surface.

This soil is suitable for hay, pasture, row crops, and woodland. If it is used for row crops the hazard of erosion is high. This soil does not respond well to fertilizer, and it is droughty during dry periods. For woodland use, white pine and white spruce are suitable for planting, but seedling mortality is high. Also, susceptibility to windthrow is moderate because of shallowness to bedrock. Shallowness to bedrock also limits the use of this soil for most community and recreational developments. Capability unit IVe–1; woodland group 4d1; wildlife group 6.

Canaan very rocky sandy loam, 3 to 8 percent slopes (CeB).—This soil is dominantly on the crests of wooded hills. Depth to bedrock is about 16 inches, but the profile otherwise is similar to the one described as representative of the series. Runoff is medium, and available water capacity is low. Included in mapping are small areas of Hermon and Peru soils. Also included are a few areas that have stones on the surface.

This Canaan soil is suitable for permanent pasture or woodland. For woodland use white pine and white spruce are suited, but seedling mortality is severe. Also, equipment limitations are moderate because of many rock outcrops, and susceptibility to windthrow is moderate because of shallowness to bedrock. Shallowness to bedrock and rock outcrops severely limit the use of this soil for most community and recreational purposes. Capability unit VIs–1; woodland group 4x1; wildlife group 8.

Canaan very rocky sandy loam, 8 to 20 percent slopes (CeC).—This soil is in steep, dominantly wooded

and hilly areas. Depth to bedrock is about 16 inches, but the profile otherwise is similar to the one described as representative of the series. Runoff is medium to rapid, and available water capacity is low. Included in mapping are small areas of Hermon and Peru soils. Also included are a few areas that have stones on the surface.

This Canaan soil can be used as permanent pasture and woodland. For woodland use white pine and white spruce are suitable for planting, but seedling mortality is severe. Also, equipment limitations are moderate because of many rock outcrops, and susceptibility to windthrow is moderate because of shallowness to bedrock. Limitations are severe on this soil for community and recreational uses because of the shallowness to bedrock, many rock outcrops, and steepness of slope. Capability unit VIs–1; woodland group 4x1; wildlife group 8.

Canaan very rocky sandy loam, 20 to 60 percent slopes (CeE).—This soil is on the lower part of the slopes of small mountains and hills. Except that depth to bedrock is about 14 inches, its profile is similar to the one described as representative of the series. Runoff is very rapid. Included in mapping are small areas that have stones on the surface. Also included are areas that have a few rock outcrops and areas that have many rock outcrops.

This Canaan soil can be used as woodland, wildlife habitat, scenic vistas, and ski areas. For woodland use white pine and white spruce are suitable for planting, but seedling mortality is severe, and equipment limitations are severe because of rock outcrops and steepness of slope. Also, the hazard of windthrow is moderate because of shallowness to bedrock, and the hazard of erosion is moderate. Limitations are severe on this soil for community and recreational uses because of shallowness to bedrock, rock outcrops, and steepness of slope, except in places where steep areas are used for skiing. Capability unit VIIs–1; woodland group 4x2; wildlife group 8.

Coastal Beaches

Coastal beaches (Ck) consists of postglacial river or glacial outwash deposits of rounded sand or pebbles, or of both, that have been reworked by the action of ocean waves. In places cobblestones, large boulders, and stones are in these areas. This mapping unit is south of Portland. The vegetation consists of wild saltgrass and of a few stands of stunted pine and spruce.

Permeability is very rapid in Coastal beaches. This land type is subject to tidal flooding, and has a fluctuating water table. It is not suited to crops and trees. This unit is useful mainly as swimming areas and as scenic vistas. Capability unit VIIIs–5; woodland group, not suited to growing trees for commercial purposes; wildlife group 13.

Cut and Fill Land

Cut and fill land (Cu) consists of excavated soil material and bedrock at highway, airport, and building sites that have been redistributed in adjacent areas to depths of from 2 to 15 feet. The material consists of sandy, clayey, silty, cobbly, and gravelly sediment separately or in various combinations.

Because of the variability of the material of cut and fill land at any one location, onsite investigation is needed to determine the suitability of this land type for a particular use. Capability unit, unclassified; woodland group, needs onsite investigation; wildlife group, needs onsite investigation.

Deerfield Series

The Deerfield series consists of deep, moderately well drained, nearly level to gently sloping, coarse-textured soils. These soils formed in sands of glacial outwash origin. They are on terraces in the central and coastal parts of the county.

A representative profile of a Deerfield soil in a cultivated area has a surface layer of brown loamy sand 10 inches thick. The upper 5 inches of the subsoil is yellowish-brown, friable loamy sand, and the lower 9 inches is light olive-brown, loose unstratified sand that has strong-brown mottles. The substratum, at a depth of 24 inches, is olive, loose unstratified sand that has strong-brown and reddish-brown mottles.

A water table is at a depth of 1 to 2½ feet in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more. Permeability is very rapid, but the seasonal high water table affects internal drainage for critical periods. These soils have low available water capacity.

Most of the acreage of Deerfield soils is cultivated but many areas are wooded. Common species are white pine, spruce, balsam fir, gray birch, beech, red maple, and sugar maple.

Representative profile of Deerfield loamy sand, 0 to 3 percent slopes, 0.25 mile east of the junction of Ash Swamp Road and Hearn Road on north side of road in Scarborough Township:

Ap—0 to 10 inches, brown (10YR 4/3) loamy sand; weak, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

B21—10 to 15 inches, yellowish-brown (10YR 5/6) loamy sand; weak, fine, granular structure; friable when moist; common roots; strongly acid; clear, wavy boundary.

B22—15 to 24 inches, light olive-brown (2.5Y 5/4) unstratified sand; common, medium, distinct, strong-brown (7.5YR 5/8) mottles; single grain; loose when moist; a few roots; strongly acid; clear, wavy boundary.

C—24 to 60 inches, olive (5Y 5/3) unstratified sand; many, medium, distinct to prominent, strong-brown (7.5YR 5/6) and reddish-brown (5YR 4/3) mottles; single grain; loose when moist; strongly acid.

The solum ranges from 15 to 30 inches in thickness, and depth to mottling in the solum ranges from 15 to 30 inches. Reaction ranges from strongly acid to medium acid in the solum and in the C horizon.

The Ap horizon is brown (10YR 4/3) or very dark grayish brown (10YR 3/2) and ranges from loamy sand to fine sandy loam. In undisturbed areas an A1 horizon is thinner than the Ap horizon, but it is similar in texture and in color. In undisturbed areas the B21 horizon is somewhat thicker than is indicated above. The B horizon ranges from loamy sand to sand and from friable to loose. The C horizon is olive (5Y 5/3) or dark gray (5Y 4/1) and ranges from loamy sand to coarse sand.

Associated with the Deerfield soils in the landscape are the Au Gres, Saugatuck, Scarboro, Sebago, and Windsor soils.

Deerfield soils are similar to these soils, but Au Gres and Saugatuck soils are somewhat poorly drained, and Windsor soils are excessively drained. Deerfield soils lack the ortstein layer that is present in Saugatuck soils. Deerfield soils are mineral soils, but Sebago soils are organic soils.

Deerfield loamy sand, 0 to 3 percent slopes (DeA).—This soil has the profile described as representative of the series. It is on terraces. Included in mapping are small areas of Hinckley, Walpole, and Windsor soils. Also included are small areas of soils that have a finer textured substratum.

Runoff is slow. Available water capacity is low, though moisture generally is ample for most of the growing season because of a seasonal high water table. Late in summer the water table is lower, and this soil becomes droughty in places.

This Deerfield soil is suited to hay, pasture, row crops, and woodland. Wetness in spring is a concern of management. This soil does not respond well to fertilizer. For woodland use white pine and red pine are suitable for planting. Limitations are moderate to severe on this soil for community and recreational uses because of seasonal wetness and a seasonal high water table. Capability unit IIIw–5; woodland group 4o1; wildlife group 2.

Deerfield loamy sand, 3 to 8 percent slopes (DeB).—This soil is on terraces. Included in mapping are small areas of Hinckley, Walpole, and Windsor soils. Also included are small areas of soils that have a fine-textured substratum.

Runoff is slow. Available water capacity is low, though moisture generally is ample for most of the growing season because of a seasonal high water table. In late summer the water table is lower, and this soil becomes droughty in places.

This Deerfield soil can be used for hay, pasture, row crops, or woodland. Wetness in spring is a concern of management. The soil does not respond well to fertilizer. For woodland use white pine and red pine are suitable for planting. Limitations are moderate to severe on this soil for community and recreational uses because of seasonal wetness and a seasonal high water table. Capability unit IIIw–5; woodland group 4o1; wildlife group 2.

Dune Land

Dune land (Du) consists of deposits of fine and medium sand of glacial outwash and eolian origin. Slopes are short and undulating to steep. These deposits have not developed a profile because of shifting sands, a lack of vegetation, and biotic activity. Included in mapping are small areas of excessively drained Windsor loamy sands.

Dune land has severe or very severe limitations for farming and for woodland, community, and recreational uses. Capability unit VIIIs–5; woodland group 6s1; wildlife group 13.

Elmwood Series

The Elmwood series consists of deep, nearly level to undulating, moderately well drained soils. These soils formed in moderately coarse textured sediment of glaciofluvial origin that overlies fine textured and moderately fine textured sediment of marine and lacustrine origin. These soils are on terraces adjacent to streams and rivers in the central lowland and in the coastal areas.

A representative profile of an Elmwood soil in a cultivated area has a surface layer of dark-brown fine sandy loam 8 inches thick. Below the surface layer is 7 inches of yellowish-brown, friable sandy loam, which overlies 7 inches of light olive-brown sandy loam that has strong-brown mottles. At a depth of 22 inches is 3 inches of light olive-gray, massive sandy loam that has dark yellowish-brown mottles. This layer is underlain by 7 inches of pale-olive, firm sandy clay loam that has yellowish-brown mottles. The substratum, at a depth of 32 inches, is olive, firm silty clay loam.

The water table is at a depth of 1 to 2½ feet in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more.

Most areas of these soils are used for farming, but a few areas are wooded. The stands consists mainly of red pine, white pine, and northern hardwoods.

Representative profile of Elmwood fine sandy loam, 0 to 8 percent slopes, 0.3 mile north of the York County and Cumberland County line on the east side of U.S. Highway No. 1 in Scarborough Township:

Ap—0 to 8 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many roots; medium acid; abrupt, smooth boundary.

B21—8 to 15 inches, yellowish-brown (10YR 5/6) sandy loam; weak, very fine, granular structure; friable; common roots; medium acid; clear, wavy boundary.

B22—15 to 22 inches, light olive-brown (2.5Y 5/6) sandy loam; common, medium, distinct, strong-brown (7.5YR 5/8) mottles; massive; friable; a few roots; medium acid; clear, wavy boundary.

A'2—22 to 25 inches, light olive-gray (5Y 6/2) sandy loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; massive; friable; medium acid; abrupt, wavy boundary.

IIB'2—25 to 32 inches, pale olive (5Y 6/3) sandy clay loam; common, medium, distinct, yellowish-brown (10YR 5/8) mottles; moderate, fine, subangular blocky structure; firm; a few clay or silt coatings on vertical faces of peds and a very few on horizontal faces; thin silt and clay coatings in channels and pores; slightly acid; clear, wavy boundary.

IIC—32 to 60 inches, olive (5Y 4/3) silty clay loam; moderate, medium to thick, platy structure; firm; manganese stains on horizontal and vertical faces of peds; thin discontinuous coatings of fine silt on all faces of peds; faces are greenish-gray (5GY 6/1); slightly acid to neutral.

The solum ranges from 19 to 38 inches in thickness. Reaction ranges from strongly acid to slightly acid in the solum and from slightly acid to neutral in the C horizon.

The Ap horizon ranges from fine sandy loam to loam or sandy loam. The B21 and B22 horizons range from fine sandy loam to sandy loam. In the B21 horizon hue is 7.5YR, 10YR, or 2.5Y; value ranges from 3 to 5; and chroma ranges from 3 to 6. The IIB'2 horizon is sandy clay loam, silty clay loam, silty clay, or clay loam.

Associated with Elmwood soils in the landscape are Buxton, Melrose, Scantic, Suffield, Swanton, and Whately soils. Elmwood soils are moderately well drained, Swanton soils are somewhat poorly drained to poorly drained, and Whately soils are very poorly drained. Elmwood soils are moderately coarse textured to a depth of about 24 inches and moderately fine and fine textured below. They are coarser textured in the upper part than Buxton, Suffield, and Scantic soils, which are medium textured throughout.

Elmwood fine sandy loam, 0 to 8 percent slopes (EmB).—This soil has the profile described as representative of the series. It is on terraces adjacent to streams and rivers. Included in mapping are small areas of Melrose, Swanton, and Whately soils and small areas of soils that have a loamy sand surface layer and subsoil.

Runoff is slow to medium on this soil. Permeability is rapid above the fine-textured layer and slow within it. Available water capacity is high.

This Elmwood soil can be used for hay, pasture, and row crops if drainage is provided. It is also suited to woodland, and white pine, red pine, and white spruce are suitable for planting. This soil has severe to very severe limitations for most uses in community development, mainly because of its slow permeability and seasonal high water table. It has moderate limitations for most recreational uses because of slow drying and seasonal wetness. Capability unit IIw–8; woodland group 3o1; wildlife group 2.

Gravel Pits

Gravel pits (Gp) consists of open excavations of various sizes. The lower parts of the slopes are very steep. This land type generally is associated in the landscape with Hinckley soils, but areas are also near other soils of glacial outwash origin. Included in mapping are sand pits and borrow pits. Areas of Gravel pits too small to be delineated on the soil map are indicated by conventional symbols for Gravel pits. Steep banks of inactive areas of Gravel pits can be reclaimed if they are graded and seeded to grasses. Capability unit, unclassified; woodland group, needs onsite investigation; wildlife group 13.

Hartland Series

The Hartland series consists of deep, well-drained, gently sloping to strongly sloping, medium-textured soils. These soils formed in marine and lacustrine sediment. They are on terraces in coastal areas of the county.

A representative profile of a Hartland soil in a cultivated area has a surface layer of dark-brown silt loam 9 inches thick. Below this is 2 inches of grayish-brown, friable very fine sandy loam. The upper 12 inches of the subsoil is dark-brown and olive-brown, friable silt loam. The lower 6 inches of the subsoil is dark grayish-brown, friable very fine sandy loam. The substratum, at a depth of 29 inches, is alternating bands of light olive-brown, firm silt and yellowish-brown, firm very fine sand.

Depth to bedrock is 5 feet or more, and a seasonal high water table is at a depth of 3 to 5 feet or more. Permeability ranges from moderately rapid to moderately slow, and available water capacity is high.

Most areas of Hartland soils were formerly cultivated, but many are now wooded. Common species are hardhack, white pine, and ground juniper.

Representative profile of Hartland very fine sandy loam, 3 to 8 percent slopes, off Mumford Road near the dump in North Yarmouth Township:

Ap—0 to 9 inches, dark-brown (10YR 3/3) very fine sandy loam; moderate, fine, granular structure; very friable when moist; many roots; medium acid; abrupt, smooth boundary.

A2—9 to 11 inches, grayish-brown (10YR 5/2) very fine sandy loam; moderate, fine, granular structure; friable when moist; common roots; medium acid; clear, wavy boundary.

B21h—11 to 16 inches, dark-brown (10YR 4/3) silt loam; moderate, fine, blocky structure; friable when moist; common roots; medium acid; clear, wavy boundary.

B22ir—16 to 23 inches, olive-brown (2.5Y 4/4) silt loam; moderate, medium, blocky structure; friable when moist; a few thin films in root channels; a few roots; medium acid; clear, wavy boundary.

B23—23 to 29 inches, dark grayish-brown (2.5Y 4/2) very fine sandy loam; moderate, medium, blocky structure; friable when moist; a few roots; medium acid; clear, wavy boundary.

C—29 to 60 inches, light olive-brown (2.5Y 5/4) silt varves and yellowish-brown (10YR 5/6) very fine sand varves; many small lenses of silty clay loam or clay; weak, thin, platy structure; firm when moist; a few roots in the upper part of the horizon; medium acid.

The solum ranges from 16 to 30 inches in thickness. Reaction ranges from strongly acid to neutral in the solum and in the substratum.

The A and B horizons range from silt loam to very fine sandy loam. The B21h, B22ir, and B23 horizons range from dark brown (10YR 4/3) to light olive brown (2.5Y 5/6). The C horizon is varved light olive-brown (2.5Y 5/4) silt and very dark grayish-brown (2.5Y 3/2) or yellowish-brown (10YR 5/6) very fine sand. The C horizon has massive or weak, thin to thick, platy structure.

Associated with Hartland soils in the landscape are Belgrade, Buxton, Elmwood, Melrose, Scantic, and Suffield soils. Hartland soils are similar to these soils, but Belgrade soils are moderately well drained. Also, the well-drained Suffield soils, the moderately well drained to somewhat poorly drained Buxton soils, and the poorly drained Scantic soils formed in finer textured material than the Hartland soils. Melrose soils and the moderately well drained Elmwood soils formed in fine sandy loam or sandy loam over fine-textured material.

Hartland very fine sandy loam, 3 to 8 percent slopes (HfB).—This soil has the profile described as representative of the series. It is on terraces adjacent to natural drainageways, streams, and rivers. Runoff is medium on this soil. Included in mapping are some small areas of Belgrade, Buxton, and Elmwood soils and a few small areas of shallow soils.

This Hartland soil can be used for hay, pasture, and row crops and as woodland. If this soil is cultivated, it is susceptible to erosion. For woodland, white pine and red pine are suitable for planting. Capability unit IIe–7; woodland group 3o1; wildlife group 1.

Hartland very fine sandy loam, 8 to 15 percent slopes, eroded (HfC2).—This soil is on the lower part of slopes of terraces adjacent to drainageways, streams, and rivers. Its surface layer and the upper part of its subsoil are thinner than those of the profile described as representative of the series, but the two profiles otherwise are similar. Runoff is rapid. Included in mapping are small areas of Belgrade and Suffield soils. Also included are small areas of soils that have a very sandy subsoil and a few areas of shallow soils.

This Hartland soil can be used for hay, pasture, row crops, and woodland. If it is cultivated, erosion is a hazard. If this soil is used for woodland, white pine and red pine are suitable for planting, and the hazard of erosion is moderate. Capability unit IIIe–7; woodland group 3r1; wildlife group 1.

Hartland very fine sandy loam, 15 to 25 percent slopes, eroded (HfD2).—This soil is on the lower part of slopes of terraces adjacent to natural drainageways,

streams, and rivers. Its surface layer and the upper part of its subsoil are thinner than those in the profile described as representative of the series, but the two profiles otherwise are similar. Runoff is very rapid. Included in mapping are small areas of Melrose soils. Also included are a few small areas of soils that have a sandy subsoil and a few small areas of steeper soils.

This Hartland soil can be used for hay, pasture, and woodland. If it is used for hay, steepness of slope restricts the use of machinery. This soil is not suitable for row crops, because steepness of slope restricts the use of equipment, and erosion is a hazard. For woodland, white pine and red pine are suitable for planting, although the hazard of erosion is severe, and equipment limitations are moderate because of steepness of slope. Capability unit IVe–7; woodland group 3r2; wildlife group 10.

Hermon Series

The Hermon series consists of deep, well-drained to somewhat excessively drained, gently sloping to very steep soils that are moderately coarse textured to coarse textured. These soils formed in granitic glacial till and contain many small and large stone fragments. They are on uplands in the northwestern part of the county.

A representative profile in a wooded area has a layer of forest litter, 1 inch thick, that overlies a surface layer of grayish-brown sandy loam 3 inches thick. The upper 2 inches of the subsoil is dark reddish-brown, friable sandy loam, and the next 10 inches is strong-brown, friable gravelly sandy loam. The lower 6 inches of the subsoil is yellowish-brown, friable gravelly coarse sand. The substratum, at a depth of 21 inches, is very pale brown, loose gravelly loamy sand.

A water table generally is at a depth of 3 to 5 feet. Depth to bedrock is 5 feet or more. Permeability is rapid in these soils, and available water capacity is low.

A few areas of Hermon soils were formerly used for farming, but most areas are now wooded. Common species are white and black spruce, eastern hemlock, white pine, red maple, gray birch, beech, and oak.

Representative profile of Hermon very stony sandy loam, 8 to 15 percent slopes, 100 feet west of the junction of State Route 114 and State Route 11 in Sebago Township:

O1—1 inch to 0, very dark brown (10YR 2/2) undecomposed forest litter.

A2—0 to 3 inches, grayish-brown (10YR 5/2) sandy loam; weak, fine, granular structure; friable; many roots; very strongly acid; abrupt, wavy boundary.

B21h—3 to 5 inches, dark reddish-brown (5YR 3/3) sandy loam; weak, fine, granular structure; friable; many roots; strongly acid; abrupt, wavy boundary.

B22ir—5 to 15 inches, strong-brown (7.5YR 5/6) gravelly sandy loam; weak, fine, granular structure; friable; common roots; 30 percent coarse fragments; strongly acid; clear, wavy boundary.

B23—15 to 21 inches, yellowish-brown (10YR 5/6) gravelly coarse sand; weak, fine, granular structure; friable; common roots; 20 percent coarse fragments; strongly acid; abrupt, wavy boundary.

C—21 to 60 inches, very pale brown (10YR 7/3) gravelly loamy sand; single grain; loose; 35 percent coarse fragments; strongly acid.

The solum ranges from 15 to 26 inches in thickness. Reaction ranges from very strongly acid to strongly acid throughout the profile.

The A2 and B21h horizons, as well as their gravelly analogs, range from fine sandy loam to loamy sand. In the B21h horizon hue is 5YR or 7.5YR, value is 3 or 4, and chroma ranges from 2 to 6. In the B22ir horizon hue is 7.5YR or 10YR, value is 5 or 6, and chroma ranges from 3 to 8. In the C horizon hue is 10YR or 2.5Y, value is 6 or 7, and chroma ranges from 1 to 4. The content of coarse fragments in this horizon ranges from 35 to 55 percent.

Associated with Hermon soils in the landscape are Canaan, Paxton, Peru, Ridgeway, and Whitman soils. Hermon soils are similar to these soils, but Canaan soils are shallow, Peru soils are moderately well drained, Ridgebury soils are poorly drained, and Whitman soils are very poorly drained. Also, Hermon soils are coarser textured than the Paxton, Peru, Ridgebury, and Whitman soils, and they lack the fragipan that is characteristic of those soils.

Hermon sandy loam, 3 to 8 percent slopes (HgB).—This soil is on the crests of ridges. It has a profile similar to the one described as representative of the series, except that its surface layer is darker and thicker and the upper part of its subsoil is thinner. Runoff is slow. Included in mapping are small areas of Peru and Canaan soils. Also included are a few small areas that have many stones on the surface.

This Hermon soil can be used for row crops if it is irrigated and heavily fertilized. It does not retain fertilizer well; consequently, large applications are needed. Many stones and boulders that are as much as 1 foot to several feet in diameter limit the use of most farm machinery on this soil. This soil can be used for hay crops, pasture, or woodland. If it is used for woodland, white pine and red pine are suitable for planting. Limitations on this soil are slight for most community developments and recreational uses. Capability unit IIs–3; woodland group 4s1; wildlife group 1.

Hermon sandy loam, 8 to 15 percent slopes (HgC).—This soil is on the sides of ridges. It has a profile similar to the one described as representative of the series, except that its surface layer is darker and thicker, and the upper part of its subsoil is thinner. Runoff is slow to medium. Included in mapping are a few small areas that have many stones on the surface. Also included are small areas of Peru, Ridgebury, and Whitman soils and rock outcrops.

This Hermon soil can be used for row crops if it is irrigated, if practices are used to help to control erosion, and if heavy applications of fertilizer are applied. Many stones and boulders that are as much as 1 foot to several feet in diameter restrict the use of most farm machinery on this soil. This soil can be used for hay and pasture, but it tends to be droughty during long dry periods. It is also suitable for woodland, and white pine and red pine are suitable for planting. Limitations are slight on this soil for most uses that affect community development. Because of steepness of slopes, limitations are moderate to very severe for most recreational uses. Capability unit IIIes–3; woodland group 4s1; wildlife group 1.

Hermon sandy loam, 15 to 25 percent slopes (HgD).—This soil is on the sides of ridges. Its profile is similar to the one described as representative of the series, except that its surface layer is darker and slightly thicker, and the upper part of its subsoil is slightly thinner. Many stones and boulders are below the surface of the areas of this soil. Runoff is medium. Included in mapping are a few areas that have many stones on the surface. Also included are small areas of rock outcrops.

This Hermon soil is too steep to be used for row crops. It is suitable for hay crops and for pasture, but droughtiness limits these uses during long dry periods. This soil is also suitable for use as woodland, and white pine and red pine are suitable for planting. Use of equipment needed for growing of hay crops is limited by steepness of slope. Equipment limitations are moderate in wooded areas because of strong slopes. Limitations are severe on this soil for most uses related to community development and recreation, mainly because of strong slopes. Capability unit IVes–3; woodland group 4s2; wildlife group 10.

Hermon very stony sandy loam, 3 to 8 percent slopes (HhB).—This soil is on the crests of wooded ridges. Stones and boulders on the surface are 1 foot to several feet in diameter and 10 to 100 feet apart. Also, many stones and boulders are within the soil. Runoff is slow. Included in mapping are small areas of Peru soils in seepage areas and adjacent to drainageways.

This Hermon soil can be used for permanent pasture and for woodland. Stones and boulders on the surface severely limit its use for row and hay crops. Limitations are slight for use as woodland. White pine and red pine are suitable for planting. Limitations are slight on this soil for most uses related to community development. Limitations are moderate to severe for recreational uses, mainly because of stoniness. Capability unit VIs–3; woodland group 4s1; wildlife group 7.

Hermon very stony sandy loam, 8 to 15 percent slopes (HhC).—This soil has the profile described as representative of the series. It is on the sides of wooded ridges. Stones and boulders on the surface are 1 foot to several feet in diameter and 10 to 100 feet apart. Also, many stones and boulders are within the soil. Runoff is slow to medium. Included in mapping are small areas of Peru soils.

This Hermon soil can be used as permanent pasture and as woodland. Surface stones, boulders, and steepness of slope severely limit its use for row and hay crops. If this soil is used for woodland, white pine and red pine are suitable for planting. Limitations are slight on this soil for most uses related to community development. Limitations for recreational uses are moderate to very severe because of steepness of slope and stoniness. Capability unit VIs–3; woodland group 4s1; wildlife group 7.

Hermon very stony sandy loam, 15 to 30 percent slopes (HhD).—This soil is on the sides of wooded ridges. Surface stones and boulders are 1 foot to several feet in diameter and are 10 to 100 feet apart. Also, many stones and boulders are within the soil. Runoff is medium. Included in mapping are small areas of rock outcrops and Peru soils.

This soil is suitable for use as permanent pasture in places and also for woodland. Steepness of slope and stones and boulders on the surface severely limit its use for row crops and hay. If this soil is used for woodland, white pine and red pine are suitable for planting. Because of steepness of slope, equipment limitations are moderate if this soil is used for woodland and very severe if it is used for purposes related to community development. Slope and stoniness very severely limit the use of this soil for most recreational activity. Capability unit VIs–3; woodland group 4s2; wildlife group 8.

Hermon extremely stony sandy loam, 8 to 20 percent slopes (HkC).—This soil is on wooded ridges. Stones and boulders on the surface are 1 foot to several feet in diameter and less than 5 feet apart. Also, many stones and boulders are within the soil. Runoff is medium.

This Hermon soil is suited only to trees because of excessive surface stones and boulders. Red pine and white pine are suitable for planting, though equipment limitations are moderate because of steepness of slope. Stoniness moderately to very severely limits use of this soil for community development, and severely to very severely limits its use for recreation. Capability unit VIIs–3; woodland group 4x3; wildlife group 8.

Hermon extremely stony sandy loam, 20 to 60 percent slopes (HkE).—This soil is mainly on irregular sides of ridges and adjacent to a few lakes. Stones and boulders on the surface are 1 foot to several feet in diameter and less than 5 feet apart. Also, many stones and boulders are within the soil. Runoff is rapid to very rapid.

This Hermon soil is suited only to trees because of excessive stones and boulders on the surface. Red pine and white pine are suitable for planting. If trees are planted, the hazard of erosion is moderate, and equipment limitations are severe because of steepness of slope. Slope and excessive stones and boulders very severely limit the use of this soil for community development, and severely to very severely limit its use for recreation. Capability unit VIIs–3; woodland group 4x4; wildlife group 8.

Hinckley Series

The Hinckley series consists of deep, excessively drained, gently sloping to strongly sloping soils that are moderately coarse textured to coarse textured. These soils formed in glacial outwash deposits on terraces and eskers that commonly are known as "horsebacks." They are in central and northern parts of the county.

A representative profile of a Hinckley soil, in a formerly cultivated area that is now under a cover of white pine, has a layer of organic litter 4 inches thick over a surface layer of very dark grayish-brown gravelly sandy loam 7 inches thick. The upper 3 inches of the subsoil is dark yellowish-brown, very friable sandy loam, and the lower 14 inches is yellowish-brown, very friable to loose gravelly loamy sand to very gravelly sand. The substratum, at a depth of 24 inches, is light olive-brown, loose very gravelly loamy sand.

Depth to bedrock is 5 feet or more. Permeability is very rapid in this soil, and available water capacity is low.

Most areas of Hinckley soils were once cultivated, but many areas are now wooded. Common species are white pine, red pine, gray birch, and white birch.

Representative profile of Hinckley gravelly sandy loam, 3 to 8 percent slopes, one-eighth mile north of junction of State Route 85 and U.S. Route 302 on east side of road in Raymond Township:

O1—4 inches to 1, litter of white pine needles and twigs.
O2—1 inch to 0, partly decomposed white pine needles.
Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) gravelly sandy loam; weak, fine, granular structure; very friable when moist; many roots; 20 percent fine gravel; strongly acid; abrupt, wavy boundary.
B21—7 to 10 inches, dark yellowish-brown (10YR 4/4) gravelly sandy loam; very weak, fine, granular structure; very friable when moist; common roots; 25 to 30 percent gravel; strongly acid; clear, wavy boundary.
B22—10 to 19 inches, yellowish-brown (10YR 5/4) gravelly loamy sand; weak, very fine, granular structure; very

friable when moist; common roots; 35 percent gravel; strongly acid; clear, wavy boundary.

B3—19 to 24 inches, yellowish-brown (10YR 5/4) very gravelly sand; single grain; loose when moist; common roots; 50 percent gravel; strongly acid; abrupt, wavy boundary.

C—24 to 60 inches, light olive-brown (2.5Y 5/4) very gravelly sand consisting of stratified sands, gravel, and cobblestones; single grain; loose when moist; 70 percent gravel; strongly acid.

The solum ranges from 12 to 24 inches in thickness. Reaction in the solum ranges from strongly acid to extremely acid.

The Ap, B21, and B22 horizons are gravelly loamy sand or gravelly sandy loam. The gravel content of the Ap, B21, and B22 horizons ranges from 15 to 50 percent. In the B21 horizon hue is 10YR or 7.5YR, value is 4 or 5, and chroma ranges from 4 to 8. In the B22 horizon hue is 10YR, value is 4 or 5, and chroma ranges from 4 to 8. The gravel content of the C horizon ranges from 35 to 80 percent.

Associated with Hinckley soils in the landscape are Deerfield, Scarboro, Sebago, and Walpole soils. Hinckley soils are similar to these soils, but Deerfield soils are moderately well drained, Walpole soils are somewhat poorly drained to poorly drained, and Scarboro soils are very poorly drained. Also, Sebago soils formed in organic deposits.

Hinckley gravelly sandy loam, 3 to 8 percent slopes (HlB).—This soil has the profile described as representative of the series. It is on terraces and on the tops of eskers. Runoff is slow. Included in mapping are a few small areas of Windsor soils and wet areas.

This Hinckley soil can be used for hay, pasture, and woodland but droughtiness in dry weather is a limitation. If this soil is irrigated and heavily fertilized, it can also be used for row crops. This soil does not retain fertilizer well, so large applications are needed. If it is used for woodland, white pine and red pine are suitable for planting, but seedling mortality is severe. Other limitations to woodland use are few. This soil is a good source of sand and gravel. Capability unit IIIs–5; woodland group 5s1; wildlife group 5.

Hinckley gravelly sandy loam, 8 to 15 percent slopes (HlC).—This soil is on the lower part of slopes of terraces and eskers. Its profile is similar to the one described as representative for the series, except that its surface layer is thinner. Runoff is slow. Included in mapping are small areas of Merrimac soils, small wet areas, and small areas that have a few stones on the surface.

This Hinckley soil can be used for hay, pasture, and woodland though it tends to be droughty during dry periods. If this soil is irrigated and fertilized, it is suitable for row crops. This soil does not retain fertilizer well, so large applications are needed. Moderate slopes restrict the use of machinery on this soil if it is used for row crops. For woodland use, white pine and red pine are suitable for planting, but seedling mortality is severe. Other limitations to use for woodland are few. This soil is a good source of sand and gravel. Capability unit IVs–5; woodland group 5s1; wildlife group 5.

Hinckley gravelly sandy loam, 15 to 25 percent slopes (HlD).—This soil is on the lower part of irregular slopes of eskers and terraces. It has a profile similar to the one described as representative of the series, except that its surface layer is thinner. Runoff is slow. Included in mapping are small areas of Hinckley soils that are less steep and a few small, wet areas.

This Hinckley soil can be used as permanent pasture and woodland. If it is used as woodland, white pine and red pine are suitable for planting, though seedling mortality is severe, and equipment limitations are moderate. This soil is a good source of sand and gravel. Capability unit VIs–5; woodland group 5s2; wildlife group 8.

Hinckley-Suffield complex, 3 to 8 percent slopes (HnB).—This mapping unit consists of gently sloping to undulating soils on terraces in the coastal areas of the county. About 60 percent of this unit generally is Hinckley soils on knolls of terraces, and about 40 percent is Suffield soils and included soils in areas below Hinckley soils. The Hinckley and Suffield soils each has the profile described as representative of its respective series. Included in mapping are small areas of Belgrade, Buxton, and Hartland soils.

The soils in this unit can be used for hay, pasture, and woodland, though droughtiness is a limitation in dry periods. If these soils are irrigated and heavily fertilized, they are suitable for row crops. For woodland use, white pine and red pine are suitable for planting. Although seedling mortality is severe, other limitations are few. The soils in this unit are a source of gravel. Capability unit IIIes–57; woodland group 5s1; wildlife group 5.

Hinckley-Suffield complex, 8 to 15 percent slopes (HnC).—This mapping unit consists of moderately sloping soils that are on the lower part of slopes of terraces in the coastal areas of the county. Hinckley soils occupy 60 percent of the complex, and Suffield soils occupy the remaining 40 percent. Included in mapping are small areas of Belgrade, Buxton, Elmwood, Hartland, and Melrose.

The soils in this unit can be used for hay, pasture, and woodland, but droughtiness in dry periods limits the uses. If these soils are used for row crops, irrigation and fertilizer are necessary. These soils do not retain fertilizer well, so large applications are needed. Moderate slopes limit the use of machinery for row crops. For woodland, white pine and red pine are suitable for planting, but seedling mortality is high. Other limitations for woodland are few. The soils in this complex are a source of gravel. Capability unit IVs–57; woodland group 5s1; wildlife group 5.

Hinckley-Suffield complex, 15 to 25 percent slopes (HnD).—This complex consists of strongly sloping soils on the lower part of slopes of terraces in the coastal areas of the county. Hinckley soils occupy 60 percent of the complex, and Suffield soils occupy the remaining 40 percent. Included in mapping are small areas of Belgrade, Buxton, Elmwood, Hartland, and Melrose.

The soils in this unit can be used for permanent pasture or woodland. For woodland, white pine and red pine are suitable for planting, but seedling mortality is high. Use of woodland equipment is moderately limited. The soils in this complex are a source of gravel. Capability unit VIs–57; woodland group 5s2; wildlife group 8.

Hollis Series

The Hollis series consists of shallow, somewhat excessively drained, gently sloping to steep, moderately coarse-textured soils that have a few to many outcrops. These soils formed in glacial till, and they are on uplands in the northern and central parts of the county and in the coastal areas.

A representative profile of a Hollis fine sandy loam in a cultivated area has a surface layer of dark-brown fine sandy loam 6 inches thick. The upper 2 inches of the

subsoil is yellowish-brown, friable fine sandy loam, and the next 5 inches is dark yellowish-brown, friable fine sandy loam. The lower 5 inches of the subsoil is yellowish-brown, friable fine sandy loam. Schistose bedrock is at a depth of 18 inches.

Depth to bedrock ranges from 12 to 18 inches. Permeability is moderately rapid, and available water capacity is low.

Most areas of Hollis soils were formerly used for farming, but many areas are now wooded. Common species in coastal areas are spruce and balsam fir and in inland areas are oak, beech, maple, birch, eastern hemlock, white pine, and red pine.

Representative profile of Hollis fine sandy loam, 3 to 8 percent slopes, 0.25 mile west of the junction of Falmouth Road and Albion Road on north side of road in Windham Township:

Ap—0 to 6 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable when moist; many roots; 4 percent coarse fragments; strongly acid; abrupt, smooth boundary.

B21—6 to 8 inches, yellowish-brown (10YR 5/6) fine sandy loam; weak, fine, granular structure; friable when moist; common roots; 7 percent coarse fragments; strongly acid; clear, wavy boundary.

B22—8 to 13 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; weak, fine, subangular blocky structure; friable when moist; common roots; 10 percent coarse fragments; strongly acid; clear, wavy boundary.

B3—13 to 18 inches, yellowish-brown (10YR 5/4) fine sandy loam; very weak, fine, subangular blocky structure; friable when moist; common roots; 15 percent coarse fragments; strongly acid; clear, wavy boundary.

R—18 inches, slightly weathered, micaceous schist bedrock.

The solum ranges from 12 to 18 inches in thickness. Reaction ranges from very strongly acid to strongly acid in the solum. Consistence of the solum is friable or very friable.

If heavily limed, the Ap horizon ranges from medium acid to slightly acid. The Ap, B21, B22, and B3 horizons generally are fine sandy loam or loam, but range to sandy loam in some areas. In the B21 horizon hue ranges from 10YR to 7.5YR, value is 4 or 5, and chroma ranges from 4 to 6.

Associated with Hollis soils in the landscape are Buxton, Paxton, Ridgebury, Whitman, and Woodbridge soils. Hollis soils are similar to these soils, but the moderately well drained Woodbridge soils, the poorly drained Ridgebury soils, and the very poorly drained Whitman soils are deep and have a fragipan. Paxton soils are also deep. Buxton soils formed in fine-textured sediment of marine and lacustrine origin.

Hollis fine sandy loam, 3 to 8 percent slopes (HrB).—This soil has the profile described as representative of the series. It is on the crests of ridges and has a few rock outcrops. Runoff is slow. Included in mapping are small areas of Woodbridge soils in inland areas. Also included are a few small areas of Buxton soils and wet spots near coastal areas.

This Hollis soil can be used for hay and pasture, but, because of shallowness to bedrock, droughtiness limits these uses during dry periods. If this soil is irrigated, fertilized, and limed, it is suitable for row crops. If it is cultivated, erosion is a severe hazard. This soil is also suitable for woodland, and white pine and red pine are suited, though seedling mortality is severe and the windthrow hazard is moderate because of the shallowness to bedrock. Because this soil is shallow to bedrock, limitations are severe to very severe for all community uses, and severe for recreational uses. Capability unit IIIe–1; woodland group 5d1; wildlife group 6.

Hollis fine sandy loam, 8 to 15 percent slopes (HrC).—This soil is on the lower part of ridges. Its profile is similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are slightly thinner, and depth to bedrock is about 16 inches. This soil has a few rock outcrops. Runoff is medium to rapid. Included in mapping are small areas of Paxton and Woodbridge soils. Also included are small areas of Buxton soils and of soils that have many outcrops.

This Hollis soil can be used for hay and pasture, but because of shallowness to bedrock, droughtiness limits these uses during dry periods. If this soil is irrigated, fertilized, and limed it is suitable for row crops. If it is cultivated, the erosion hazard is severe. This soil can also be used for woodland, and white pine and red pine are suitable for planting, though seedling mortality is severe and the windthrow hazard is moderate because of the shallowness to bedrock. Limitations are severe to very severe for community use and severe for recreational use because of shallowness to bedrock. Capability unit IVe–1; woodland group 5d1; wildlife group 6.

Hollis fine sandy loam, 15 to 25 percent slopes (HrD).—This soil is on the irregular sides of slopes of ridges. Its profile is similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are slightly thinner, and depth to bedrock is about 16 inches. This soil has a few rock outcrops. Runoff is medium to rapid. Included in mapping are small areas of Woodbridge soils.

This Hollis soil can be used as permanent pasture. Moderately steep slopes limit its use for row and hay crops. It is suitable for woodland, and white pine and red pine are suited, though seedling mortality is severe, and equipment limitations are moderate because of moderately steep slopes. Also, the windthrow hazard is moderate because of shallowness to bedrock. Limitations for community development are severe, and limitations for recreational use are severe to very severe because of steepness of slope and shallowness to bedrock. In places this soil is well suited to ski areas. Capability unit VIe–1; woodland group 5d2; wildlife group 8.

Hollis very rocky fine sandy loam, 3 to 8 percent slopes (HsB).—This soil is on the crests of wooded ridges. It has a profile similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are slightly thinner, and depth to bedrock is about 16 inches. This soil has many rock outcrops. Included in mapping are small areas of Woodbridge soils, Hollis soils that have fewer rock outcrops, and Sebago soils. Also included are small areas that have many stones on the surface.

This Hollis soil can be used as permanent pasture and as woodland. White pine and white spruce are suitable for planting, but seedling mortality is high. Rock outcrops moderately limit the use of woodland equipment. The windthrow hazard is moderate because of shallowness to bedrock. Shallowness to bedrock very severely limits the use of this soil for community development. Recreational uses are moderately to very severely limited by shallowness to bedrock and many rock outcrops. Capability unit VIs–1; woodland group 5x1; wildlife group 8.

Hollis very rocky fine sandy loam, 8 to 20 percent slopes (HsC).—This soil is on the lower part of the slopes

of wooded ridges. It has a profile similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are slightly thinner, and the depth to bedrock is about 14 inches. Included in mapping are small areas of Paxton and Woodbridge soils.

This Hollis soil can be used as permanent pasture and as woodland. White pine and white spruce are suitable for planting, but seedling mortality is high. Many rock outcrops and steepness of slope moderately restrict the use of woodland equipment. The windthrow hazard is moderate because of shallowness to bedrock. Limitations are very severe for community development because of shallowness to bedrock. Limitations are moderate to very severe for recreational use because of shallowness to bedrock, many rock outcrops, and steepness of slope. Capability unit VIs–1; woodland group 5x1; wildlife group 8.

Hollis very rocky fine sandy loam, 20 to 35 percent slopes (HsE).—This soil is on the rough and irregular sides of slopes of wooded ridges. Its profile is similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are thinner, and depth to bedrock is about 12 to 14 inches. This soil has many rock outcrops that range from 15 to 20 feet in height. Included in mapping are small areas that have stones on the surface.

This Hollis soil can be used as woodland. White pine and red pine are suitable for planting, but seedling mortality is severe. Rock outcrops and strongly sloping to steep slopes moderately limit the use of woodland equipment. The windthrow hazard is moderate because of shallowness to bedrock. Shallowness to bedrock very severely limits the use of this soil for community development. Shallowness to bedrock, rock outcrops, and steepness of slope are moderate to severe limitations for recreational use. Capability unit VIIs–1; woodland group 5x2; wildlife group 8.

Limerick Series

The Limerick series consists of deep, poorly drained, nearly level, medium-textured soils that formed in alluvial deposits on flood plains adjacent to major streams and rivers. In Cumberland County Limerick soils are mapped only in the Limerick-Saco complex.

A representative profile of a Limerick soil in a cultivated area has a surface layer of very dark grayish-brown silt loam, 8 inches thick, over olive-gray, friable very fine sandy loam subsoil, 8 inches thick, that has olive-brown mottles. The substratum is 44 inches of dark-gray to gray, friable silt loam that has light olive-brown, yellowish-brown, and olive-gray mottles.

A water table is at a depth of 1 foot for most of the year, and the soil is susceptible to frequent flooding. Permeability is moderate, and surface runoff is slow. Depth to bedrock is 5 feet or more.

A few areas of Limerick soils are used for farming. Vegetation on these soils includes willows, black alders, elm, red maple, and water-tolerant shrubs and grasses.

Representative profile of Limerick silt loam, in Limerick-Saco complex, in a hayfield 1,000 feet east of railroad bridge, north of and adjacent to State Route 231, and east of New Gloucester village:

Ap—0 to 8 inches, very dark grayish-brown (10YR 3/2) silt loam; moderate, medium, granular structure; friable when moist; slightly acid; clear, smooth boundary.

B2g—8 to 16 inches, olive-gray (5Y 5/2) very fine sandy loam; many, distinct, light olive-brown (2.5Y 5/6) mottles; weak, fine, granular structure; friable when moist; strongly acid; clear, smooth boundary.

C1g—16 to 21 inches, dark-gray (5Y 4/1) silt loam; many, medium, distinct, light olive-brown (2.5Y 5/6) mottles; weak, fine, granular structure; friable when moist; strongly acid; clear, smooth boundary.

C2g—21 to 60 inches, gray (5Y 5/1) silt loam; many, coarse, distinct, yellowish-brown (10YR 5/8) and olive-gray (5Y 4/2) mottles; massive; friable when moist; medium acid.

The solum ranges from 10 to 18 inches in thickness. Reaction ranges from slightly acid to strongly acid throughout the profile.

The Ap, B2g, C1g, and C2g horizons range from silt loam to very fine sandy loam. The B2g horizon is absent in some areas. In the B2g and Cg horizons mottles range from a few to many and from faint to prominent. In these horizons hue is 2.5Y and 5Y, value is 4 or 5, and chroma is 1 or 2. Below a depth of 30 inches in the Cg horizon, chroma ranges from 1 to 4.

Associated with Limerick soils in the landscape are Ondawa, Podunk, Rumney, and Saco soils. Limerick soils are similar to these soils, but Saco soils are very poorly drained. Limerick soils are silt loam and very fine sandy loam but the well-drained Ondawa soils, the moderately well drained Podunk soils, and the poorly drained to somewhat poorly drained Rumney soils are principally fine sandy loam or sandy loam.

Limerick-Saco silt loams (ls).—The level and nearly level soils of this complex are on flood plains adjacent to major streams and rivers. Limerick soils make up 60 percent of the complex, and Saco soils make up the remaining 40 percent. Included in mapping are small areas of Rumney and Podunk soils.

The soils in this complex can be used as pasture, but wetness and frequent flooding are limitations. Limerick soils are severely limited by wetness and susceptibility to flooding for woodland uses, and Saco soils are not suited to this use. White pine and white spruce are suitable for planting. Flooding and a high water table severely to very severely limit the use of these soils for all community and recreational purposes. Capability unit VIw–6; woodland group for Limerick soils, 4w1; woodland group for Saco soils, unsuited; wildlife group 9.

Lyman Series

The Lyman series consists of shallow, somewhat excessively drained, moderately coarse textured, gently sloping to steep soils that have a few to many rock outcrops. These soils formed in glacial till, and they are principally on coastal peninsulas in the northeastern and southeastern parts of the county.

A representative profile of a Lyman soil in a wooded area has a layer of decomposed forest litter, 1 inch thick, underlain by a surface layer of black to reddish-gray fine sandy loam 3 inches thick. The upper 5 inches of the subsoil is dark reddish-brown, friable fine sandy loam, and the lower 8 inches of the subsoil is dark-red, friable sandy loam. Schistose bedrock is at a depth of 16 inches.

Depth to bedrock ranges from 12 to 18 inches. Permeability is moderate to moderately rapid, and available water capacity is low.

A few areas of Lyman soils were formerly used for farming, but many of these areas are now wooded.

Common species are white pine, red pine, hardhack, and ground-juniper.

Representative profile of Lyman very rocky fine sandy loam, 8 to 20 percent slopes, just east of termination of State Route 24 on Bailey Island in Harpswell Township:

O2—1 inch to 0, partly decomposed forest litter.
A1—0 to 1 inch, black (10YR 2/1) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; 2 percent coarse fragments; strongly acid; clear, smooth boundary.
A2—1 to 3 inches, reddish-gray (5YR 5/2) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; 5 percent coarse fragments; strongly acid; clear, wavy boundary.
B21h—3 to 8 inches, dark reddish-brown (2.5YR 3/4) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; 10 percent coarse fragments; strongly acid; clear, wavy boundary.
B22ir—8 to 16 inches, dark-red (2.5YR 3/6) sandy loam; weak, fine, granular structure; friable when moist; many roots; 15 percent coarse fragments; strongly acid; abrupt, smooth boundary.
R—16 inches, dark-gray, mica schist bedrock.

The solum ranges from 12 to 18 inches in thickness. The A1, A2, B21h, and B22ir horizons range from very strongly acid to medium acid in reaction.

The A1, A2, B21h horizons range from fine sandy loam to sandy loam. In the B21h horizon hue is 2.5YR and 5YR, value is 3 or 4, and chroma is 2 to 8. In the B22ir horizon, hue ranges from 2.5YR to 10YR, value is 3 or 4, and chroma is 2 to 8.

Associated with Lyman soils in the landscape are the Buxton, Canaan, Scantic, and Suffield soils. Lyman soils are similar to these soils, but Canaan soils are somewhat coarser textured. In addition, the well-drained Suffield soils, the moderately well drained Buxton soils, and the poorly drained Scantic soils are mainly medium-textured soils that formed in marine and lacustrine sediment.

Lyman fine sandy loam, 3 to 8 percent slopes (LyB).—This soil is on broad crests of ridges, and generally is surrounded by deep, finer textured soils. It has a profile similar to the one described as representative of the series, except that its surface layer is thicker and its subsoil thinner. This soil has a few rock outcrops. Runoff is slow. Included in mapping are some small areas of finer textured soils and small areas of Paxton and Woodbridge soils.

This Lyman soil can be used for hay and pasture, but, because of shallowness to bedrock, droughtiness is a limitation to these uses during dry periods. If this soil is irrigated and adequately limed and fertilized, it can be used for row crops. If it is cultivated, the erosion hazard is severe. This soil is also suitable for use as woodland, and balsam fir, white spruce, and white pine are suitable for planting, though seedling mortality is severe. Also, the windthrow hazard is moderate because of shallowness to bedrock. Shallowness to bedrock severely or very severely limits the use of this soil for community development. Limitations for most recreational uses are severe because of shallowness to bedrock. Capability unit IIIe–1; woodland group 4d1; wildlife group 6.

Lyman fine sandy loam, 8 to 15 percent slopes (LyC).—This soil is on the sides of ridges. It has a profile similar to the one described as representative of the series, except that its surface layer is thicker and its subsoil is thinner. This soil has a few rock outcrops. Runoff is medium. Included in mapping are small areas of Woodbridge soils. Also included are areas that have many rock outcrops and a few finer textured soils.

This Lyman soil can be used for hay and pasture, but because of shallowness to bedrock, droughtiness is a limitation to these uses during dry periods. If this soil is irrigated and adequately limed and fertilized, it can be used for row crops, but steepness of slope somewhat limits the use of equipment. If this soil is cultivated, the erosion hazard is very severe. This soil is also suitable for use as woodland, and balsam fir, white spruce, and white pine are suitable trees for planting, but seedling mortality is severe. In addition, the windthrow hazard is moderate because of the shallowness to bedrock. Limitations are severe or very severe on this soil for all community uses and they are severe for recreational uses because of shallowness to bedrock. Capability unit IVe–1; woodland group 4d1; wildlife group 6.

Lyman very rocky fine sandy loam, 3 to 8 percent slopes (LzB).—This soil is on the crests of wooded ridges. It generally is surrounded by deep, finer textured soils. Runoff is medium. Included in mapping are a few small areas of finer textured soils and Woodbridge soils. Also included are areas of soils that have a few rock outcrops and areas of soils that have many rock outcrops.

This Lyman soil can be used as permanent pasture and woodland. Balsam fir, white spruce, and white pine are suitable for planting, but seedling mortality is severe. Also, the windthrow hazard is moderate because of the shallowness to bedrock, and equipment limitations are moderate. Shallowness to bedrock very severely limits all community uses. Shallowness to bedrock and many rock outcrops severely limit most recreational uses. Capability unit VIs–1; woodland group 4x1; wildlife group 8.

Lyman very rocky fine sandy loam, 8 to 20 percent slopes (LzC).—This soil has the profile described as representative of the series. It is on the sides of wooded ridges. Runoff is rapid. Included in mapping are small areas of Woodbridge, Paxton, and finer textured soils.

This Lyman soil can be used as permanent pasture and woodland. Balsam fir, white spruce, and white pine are suitable for planting, but seedling mortality is severe. Also, the windthrow hazard is moderate because of the shallowness to bedrock, and equipment limitations are moderate. Shallowness to bedrock very severely limits the use of this soil for community development. Shallowness to bedrock and many rock outcrops are severe limitations for most recreational activities. Capability unit VIs–1; woodland group 4x1; wildlife group 8.

Lyman very rocky fine sandy loam, 20 to 45 percent slopes (LzE).—This soil is on rough, irregular ridges. It has a profile similar to the one described as representative of the series except that the combined thickness of its surface layer and subsoil is less, and depth to bedrock generally is about 14 inches. Some rock outcrops are 15 to 20 feet high. Runoff is rapid.

This Lyman soil can be used as woodland. Balsam fir, white spruce, and white pine are suitable for planting, but seedling mortality is severe. Also, the windthrow hazard is moderate because of shallowness to bedrock, and equipment limitations are moderate because of many rock outcrops and steepness of slope. Erosion is also a hazard. Limitations are very severe on this soil for all community and most recreational uses because of shallowness to bedrock and steepness of slope. Rock outcrops also severely limit recreational uses. Capability unit VIIs–1; woodland group 4x2; wildlife group 8.

Made Land

Made land (Md) consists of areas that are filled with trash, bricks, concrete blocks, dump residue, and industrial waste. Most of these areas are adjacent to Portland and to other large communities. Because this land type consists of such diverse materials, onsite investigation is necessary to determine the suitability of areas for a specific use. A few areas are levelled and are used for commercial purposes. Capability unit, unclassified; woodland group, needs onsite investigation; wildlife group, needs onsite investigation.

Melrose Series

The Melrose series consists of deep, moderately sloping, well-drained soils. These soils formed in moderately coarse textured sediment of glacio-fluvial origin over fine-textured sediment of marine and lacustrine origin. These soils are on terraces adjacent to streams and rivers in coastal areas.

A representative profile of a Melrose soil in a cultivated area has a surface layer of very dark grayish-brown fine sandy loam 7 inches thick. The upper 10 inches of the subsoil is yellowish-brown, friable fine sandy loam. The lower 6 inches of the subsoil is light yellowish-brown, friable sandy loam. The substratum, at a depth of about 23 inches, is olive-gray and olive, firm silty clay loam and silty clay.

Permeability is rapid above the fine-textured material and very slow within it. Available water capacity is high. Depth to bedrock is 5 feet or more.

Most areas of Melrose soils were formerly cultivated, but they are now wooded. Common species are white pine, red pine, and northern hardwoods.

Representative profile of Melrose fine sandy loam, 8 to 15 percent slopes, 1 mile southwest of the village of West Scarboro near York County line and 0.25 mile east of U.S. Highway No. 1 south of Stuart Brook in Scarborough Township:

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; medium acid; abrupt, smooth boundary.

B2—7 to 17 inches, yellowish-brown (10YR 5/8) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; medium acid; abrupt, smooth boundary.

B3—17 to 23 inches, light yellowish-brown (2.5Y 6/4) sandy loam; weak, thin, platy structure; friable when moist; a few roots; medium acid; abrupt, smooth boundary.

IIC1—23 to 30 inches, silty clay loam, olive-gray (5Y 5/2) ped surfaces and olive (5Y 4/3) ped interiors; moderate, fine, blocky structure; firm when in place, friable when removed, plastic when wet; a few roots; a few, thin, silt or clay films on horizontal faces of peds; strongly acid; abrupt, wavy boundary.

IIC2—30 to 60 inches, olive (5Y 4/3) silty clay; weak, coarse, prismatic structure, that parts to moderate, fine, blocky structure; firm when in place, friable removed, sticky when wet; thin light olive-gray (5Y 6/2) silt films on vertical faces of peds and in pores; dark-brown stains on faces of peds and in interiors; strongly acid; clear, wavy boundary.

The solum ranges from 20 to 30 inches in thickness. Reaction ranges from strongly acid to medium acid in the solum, and from strongly acid to neutral in the C horizon.

The Ap horizon ranges from fine sandy loam to loam or to very fine sandy loam. In the B2 horizon hue ranges from 7.5YR to 2.5Y, value ranges from 3 to 5, and chroma ranges from 3 to 8. In the B3 horizon hue is 10YR and 2.5Y, value is higher, and chroma is lower than in the B2 horizon. The B2 and B3 horizons range from fine sandy loam to sandy loam, and the IIC horizon is sandy clay loam, sandy clay, silty clay loam, or silty clay.

Associated with Melrose soils in the landscape are the Belgrade, Buxton, Hartland, Scantic, and Suffield soils. Melrose soils are similar to these soils, but the well-drained Suffield soils, the moderately well drained to somewhat poorly drained Buxton soils, and the poorly drained Scantic soils are mainly silt loam and silty clay loam over silty clay or clay. The well-drained Hartland soils and moderately well drained Belgrade soils are silt loam or very fine sandy loam throughout the profile.

Melrose fine sandy loam, 8 to 15 percent slopes (MeC).—This soil is on terraces adjacent to streams and rivers and is surrounded in many areas by fine-textured soils. In areas not previously cultivated, the surface layer is slightly thinner and the upper part of the subsoil is slightly thicker. Included in mapping are small areas of Elmwood soils, areas of soils that have a surface layer of loamy sand, and a few small rock outcrops.

Runoff is medium on this soil. Permeability is rapid above the fine-textured material and very slow within it. Available water capacity is high.

This Melrose soil can be used for hay and pasture, and as woodland. It can also be used for row crops, but the erosion hazard is severe. For woodland use, white pine and red pine are suitable for planting. Capability unit IIIe–8; woodland group 4o1; wildlife group 1.

Merrimac Series

The Merrimac series consists of deep, somewhat excessively drained, gently sloping to moderately sloping, moderately coarse textured to coarse textured soils. These soils formed in glacial outwash deposits and are on terraces in the central and eastern parts of the county.

A representative profile of a Merrimac soil in an uncultivated area has a surface layer of very dark gray, friable fine sandy loam 2 inches thick. The upper 6 inches of the subsoil is dark yellowish-brown, friable fine sandy loam, and the next 8 inches is yellowish-brown, very friable sandy loam. The lower 8 inches of the subsoil is brown, loose gravelly sandy loam. The substratum, at a depth of 24 inches, is light yellowish-brown, loose very gravelly sand.

Depth to bedrock is 5 feet or more. Permeability is moderately rapid to rapid, and the available water capacity is moderate.

A few areas of Merrimac soils were formerly used for farming, but they are now wooded. Common species are white pine, eastern hemlock, gray birch, red maple, sugar maple, and oak.

Representative profile of Merrimac fine sandy loam, 3 to 8 percent slopes, 0.6 mile south on Ward Road from the junction of Ward Road and U.S. Highway No. 302 and 1,000 feet east of Ward Road in Windham Township:

A1—0 to 2 inches, very dark gray (10YR 3/1) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

B21—2 to 8 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; strongly acid; clear, wavy boundary.

B22—8 to 16 inches, yellowish-brown (10YR 5/6) sandy loam; weak, fine, granular structure; very friable when moist; common roots; strongly acid; gradual, wavy boundary.
B23—16 to 24 inches, brown (10YR 5/3) gravelly sandy loam; massive; loose when moist; common roots; 20 percent gravel; strongly acid; wavy boundary.
IIC—24 to 60 inches, light yellowish-brown (2.5Y 6/4) very gravelly sand; single grain; loose when moist; a few roots in upper 4 inches; 35 percent coarse fragments; strongly acid.

The solum ranges from 18 to 30 inches in thickness. Reaction ranges from very strongly acid to medium acid in the solum and in the IIC horizon.

The A1, B21, and B22 horizons, as well as their gravelly analogs, are fine sandy loam or sandy loam. In the B21 and B22 horizons hue is 10YR or 7.5YR, value ranges from 3 to 6, and chroma ranges from 3 to 8. In the B23 horizon hue is 10YR or 2.5Y, value and chroma are similar to the B21 and B22 horizons. In the IIC horizon hue is 2.5Y or 10YR, value is 5 or 6, and chroma ranges from 4 to 6. The gravel content ranges from 0 to 25 percent in the solum and from 30 to 45 percent in the IIC horizon.

Associated with Merrimac soils in the landscape are the Deerfield, Scarboro, and Walpole soils. Merrimac soils are similar to these soils, but Deerfield soils are moderately well drained, Scarboro soils are very poorly drained, and Walpole soils are poorly drained to somewhat poorly drained.

Merrimac fine sandy loam, 3 to 8 percent slopes (MkB).—This soil has the profile described as representative of the series. It is on the tops of terraces adjacent to lakes, some streams and rivers, and coastal areas. Runoff is slow. Included in mapping are a few small areas of Deerfield, Hinckley, and Windsor soils. Also included are a few nearly level Merrimac soils, and a few small areas of soils that have many stones on the surface.

This Merrimac soil can be used for hay, pasture, and woodland, though it tends to be droughty during long dry periods. If it is irrigated, it can be used for row crops. This soil does not hold fertilizer well, so frequent applications are needed. White pine and red pine are suitable for planting, but seedling mortality is moderate. Capability unit IIs–5; woodland group 4s1; wildlife group 1.

Merrimac fine sandy loam, 8 to 15 percent slopes (MkC).—This soil is on sides of terraces adjacent to lakes, some streams and rivers, and coastal areas. Included in mapping are a few small areas of Hinckley soils and areas of soils that have many stones on the surface.

This Merrimac soil can be used for hay, pasture, and woodland, but it tends to be droughty in dry periods. If it is irrigated, it can be used for row crops. This soil does not hold fertilizer well, so frequent applications are needed. White pine and red pine are suitable for planting, but seedling mortality is moderate. Capability unit IIIes–5; woodland group 4s1; wildlife group 1.

Ondawa Series

The Ondawa series consists of deep, well-drained, medium-textured, nearly level soils. These soils formed in alluvial deposits and are on flood plains adjacent to streams and rivers.

A representative profile of an Ondawa soil in a cultivated area has a surface layer of very dark grayish-brown fine sandy loam 9 inches thick. The subsoil, about 21 inches thick, is dark-brown, friable fine sandy loam. The substratum, at a depth of 30 inches, is yellowish-brown, loose loamy fine sand.

Permeability is moderately rapid in this soil, and available water capacity is high. Depth to bedrock is 5 feet or more.

Many areas of Ondawa soils were formerly used for farming, but many areas are now wooded. Common species are white pine, American elm, red maple, sugar maple, black spruce, white spruce, black willow, and balsam fir.

Representative profile of Ondawa fine sandy loam, in a meadow along the Presumpscot River, 1,000 feet east of the junction of State Route 26 and the Maine Central Railroad in Falmouth Township:

Ap—0 to 9 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; medium acid; abrupt, smooth boundary.
B2—9 to 30 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; friable when moist; common roots; strongly acid; abrupt, wavy boundary.
IIC—30 to 60 inches, yellowish-brown (10YR 5/6) loamy fine sand; single grain; loose when moist; strongly acid.

The solum ranges from 20 to 40 inches in thickness. Reaction is strongly acid or medium acid in the solum and in the IIC horizon.

In the Ap horizon hue is 10YR or 2.5Y, value is 3 or 4, and chroma ranges from 2 to 4. The Ap and B2 horizons range from fine sandy loam to sandy loam, and the IIC horizon ranges from loamy fine sand to sand.

Associated with Ondawa soils in the landscape are Limerick, Podunk, Rumney, and Saco soils. Ondawa soils are similar to these soils, but Podunk soils are moderately well drained and Rumney soils are poorly drained to somewhat poorly drained. Limerick and Saco soils are silt loam above the substratum.

Ondawa fine sandy loam (On).—This is the only Ondawa soil mapped in the county. It is on flood plains adjacent to streams and rivers. Included in mapping are small areas of soils that have a surface layer and subsoil of silt. Also included are small areas of Podunk and Windsor soils.

Runoff is slow on this soil. Permeability is moderately rapid to rapid, and available water capacity is high.

This Ondawa soil is well suited to hay, pasture, row crops, and woodland. For woodland use, white pine, red pine, and white spruce are suitable for planting. Susceptibility to occasional flooding very severely limits the use of this soil for most community developments and moderately to very severely limits its use for most recreational purposes. Capability unit I–6; woodland group 4o1; wildlife group 1.

Paxton Series

The Paxton series consists of deep, well-drained, gently sloping to strongly sloping, moderately coarse textured soils. These soils formed in very firm stony glacial till and are on uplands in the eastern and central parts of the county.

A representative profile of a Paxton soil in a cultivated area has a surface layer of dark-brown fine sandy loam 8 inches thick. The upper 7 inches of the subsoil is yellowish-brown, friable fine sandy loam. The lower 5 inches of the subsoil is olive-gray, friable fine sandy loam. The substratum, at a depth of 20 inches, is a light olive-gray to olive-gray, firm to very firm, fine sandy loam fragipan.

Depth to bedrock is 5 feet or more. Permeability is moderate above the fragipan and moderately slow within it. The available water capacity is high.

Many areas of Paxton soils were formerly used for farming, but many of these areas are now wooded. Common species are white pine, oak, red maple, sugar maple, beech, gray birch, and eastern hemlock.

Representative profile of Paxton fine sandy loam, 3 to 8 percent slopes, 0.5 mile south of the Androscoggin-Cumberland County line and 1,000 feet on the east side of the road on top of Peacock Hill (1956 U.S.G.S. sheet), in an apple orchard in New Gloucester Township:

Ap—0 to 8 inches, dark-brown (10YR 3/3) fine sandy loam; moderate, medium, granular structure; friable when moist; many roots; 5 percent coarse fragments; slightly acid; abrupt, smooth boundary.

B2—8 to 15 inches, yellowish-brown (10YR 5/6) fine sandy loam; weak, fine, granular structure; friable when moist; common roots; 5 percent coarse fragments; slightly acid; clear, smooth boundary.

B3—15 to 20 inches, olive-gray (5Y 4/2) fine sandy loam; weak, medium, platy structure, parting to weak, fine, granular structure; friable when moist; few roots; 5 percent coarse fragments; slightly acid; abrupt, smooth boundary.

C1x—20 to 26 inches, light olive-gray (5Y 6/2) fine sandy loam; moderate, medium, platy structure; firm when moist; 10 percent coarse fragments; slightly acid; abrupt, smooth boundary.

C2x—26 to 36 inches, olive-gray (5Y 4/2) fine sandy loam; moderate, medium, platy structure; very firm when moist; 15 percent coarse fragments; slightly acid; clear, smooth boundary.

C3x—36 to 60 inches, olive-gray (5Y 5/2) fine sandy loam; moderate, thick, platy structure; very firm when moist; 15 percent coarse fragments; slightly acid.

The solum ranges from 17 to 25 inches in thickness. Reaction ranges from strongly acid to slightly acid in the solum and Cx horizon.

The Ap, B2, B3, and Cx horizons, as well as their gravelly analogs, range from loam to fine sandy loam. In the B2 horizon hue is 10YR and 7.5YR, value is 5, and chroma ranges from 5 to 8. In the Cx horizons hue is 5Y or 2.5Y, value is 3 to 6, and chroma is 2 to 4. The Cx horizons have weak or moderate and thin to thick, platy structure, but the structure is massive in some areas. The content of coarse fragments ranges from 5 to 30 percent in the solum and in the Cx horizon.

Associated with Paxton soils in the landscape are Hermon, Hollis, Lyman, Ridgebury, Whitman, and Woodbridge soils. Paxton soils have a fragipan, but Hermon soils lack a fragipan. Woodbridge soils are moderately well drained, Ridgebury soils are poorly drained, and Whitman soils are very poorly drained. Hollis and Lyman soils are shallow.

Paxton fine sandy loam, 3 to 8 percent slopes (PbB).—This soil has the profile described as representative of the series. It is on the crests of broad hills and ridges. Runoff is slow. Included in mapping are small areas of soils that have many stones on the surface. Also included are small areas of Woodbridge soils and areas of soils that lack a distinct fragipan.

This Paxton soil can be used for row crops, hay, pasture, apple orchards, and woodland. If it is cultivated, the erosion hazard is moderate. Deep-rooted plants are not suited to this soil, because in places the very firm substratum restricts the penetration of roots. For woodland use, white pine, red pine, white spruce, and larch are suitable for planting. Because permeability is slow in the substratum, this soil has severe limitations for use as homesites where septic tank systems are used for the disposal of sewage. Limitations are slight for golf courses. Capability unit IIe–4; woodland group 3o1; wildlife group 1.

Paxton fine sandy loam, 8 to 15 percent slopes (PbC).—This soil is on the sides of broad hills and ridges. Runoff is medium to rapid. Included in mapping are small areas of soils that have many stones on the surface. Also included are small areas of Woodbridge soils and rock outcrops and areas of soils that lack a distinct fragipan.

This Paxton soil can be used for row crops, hay, pasture, apple orchards, and woodland. If it is cultivated, the erosion hazard is severe, and equipment use is limited by steepness of slope. If this soil is used as woodland, white pine, red pine, white spruce, and larch are suitable for planting. Because permeability is moderately slow in the substratum, this soil has severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Limitations are slight for golf courses. Capability unit IIIe–4; woodland group 3o1; wildlife group 1.

Paxton fine sandy loam, 15 to 25 percent slopes (PbD).—This soil is on the sides of hills and ridges. It has a profile similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are thinner. Runoff is rapid. Included in mapping are small areas that have many stones on the surface. Also included are small areas of Woodbridge soils, soils that lack a distinct fragipan, soils that have a finer textured subsoil, and rock outcrop.

This Paxton soil can be used as pasture and as woodland, but strong slopes severely limit its use for hay and row crops. If this soil is used as woodland, white pine, red pine, white spruce, and larch are suitable for planting, but equipment limitations are moderate because of steepness of slope. Because of moderately slow permeability in the substratum and steepness of slope, this soil has severe limitations for use as homesites where septic tank systems are used for the disposal of sewage. In places, this soil has slight limitations for use as areas for skiing. Capability unit IVe–4; woodland group 3r3; wildlife group 10.

Paxton very stony fine sandy loam, 3 to 8 percent slopes (PfB).—This soil is on broad wooded hills and ridges. It has a profile similar to the one described as representative of the series, except that it has a thin surface mat of organic matter, a thinner surface layer, and a thicker subsoil. Many stones, as much as 2 feet in diameter, are on the surface of this soil, but they are somewhat less numerous with depth. A few large boulders are in some areas. Runoff is slow. Included in mapping are small areas of Woodbridge and Hollis soils.

This Paxton soil can be used for permanent pasture, apple orchards, and woodland. Because of stones on the surface of this soil, it has very severe limitations for hay and row crops and moderate limitations for apple orchards. White pine, red pine, white spruce, and larch are suited to woodland. Limitations are severe on this soil for use as homesites where septic tank systems are installed for the disposal of sewage, mainly because permeability is moderately slow in the substratum. Limitations are slight to use for wilderness tent sites. Capability unit VIs–4; woodland group 3o1; wildlife group 7.

Paxton very stony fine sandy loam, 8 to 15 percent slopes (PfC).—This soil is on the sides of broad wooded hills and ridges. It has a profile similar to the one described as representative of the series, except that it has a thin

surface mat of organic matter, a thinner surface layer, and a thicker subsoil. Many stones, as much as 2 feet in diameter, are on the surface of this soil, but they are somewhat less numerous with depth. A few large boulders are in some areas. Runoff is medium to rapid. Included in mapping are small areas of Woodbridge and Hollis soils. Also included are areas of soils that lack a distinct fragipan.

This Paxton soil cna be used for permanent pasture, apple orchards, and woodland. Because of stones on the surface of this soil, limitations are severe for hay and row crops and moderate for apple orchards. White pine, red pine, white spruce, and larch are suited to planting for woodland. This soil has severe limitations for use as homesites where septic tank systems are installed for the disposal of sewage, mainly because permeability is moderately slow in the substratum. Capability unit VIs–4; woodland group 3o1; wildlife group 7.

Paxton very stony fine sandy loam, 15 to 25 percent slopes (PfD).—This soil is on the sides of wooded hills and ridges. It has a profile similar to the one described as representative of the series, except that it has a thin surface mat of organic matter, a thinner surface layer, and a thicker subsoil. Many stones, as much as 2 feet in diameter, are on the surface of this soil, but they are somewhat less numerous with depth. A few large boulders are in some areas. Runoff is rapid. Included in mapping are small areas of Hollis soils and areas of soils that lack a fragipan.

This Paxton soil can be used for permanent pasture and woodland. White pine, red pine, white spruce, and larch are suitable for planting. Equipment limitations are moderate because of strong slopes. This soil has severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage, mainly because of moderately slow permeability in the substratum and strong slope. Capability unit VIs–4; woodland group 3r3; wildlife group 8.

Peru Series

The Peru series consists of deep, moderately well drained, gently sloping to moderately sloping, medium-textured soils. These soils formed in very firm, stony, glacial till. They are on uplands in the northern and northwestern parts of the county.

A representative profile of a Peru soil in a previously cultivated area has a thin organic mat over a surface layer of dark-brown fine sandy loam 6 inches thick. The upper 9 inches of the subsoil is dark reddish-brown and strong-brown, friable fine sandy loam. The lower 3 inches of the subsoil is dark yellowish-brown, friable fine sandy loam that has dark reddish-brown and olive-gray mottles. The substratum, or fragipan, at a depth of 18 inches, is grayish-brown to olive-gray, very firm fine sandy loam that has strong-brown and yellowish-brown mottles in the upper part.

Depth to bedrock is 5 feet or more. Permeability is moderate above the fragipan and moderately slow within it. Available water capacity is high. The water table is at a depth of 1 to 2½ feet in spring and during periods of heavy precipitation.

A few areas of Peru soils were formerly used for farming, but most areas are now wooded. Common species are white spruce, balsam fir, white pine, red pine, eastern hemlock, and some northern hardwood.

Representative profile of Peru fine sandy loam, 0 to 8 percent slopes, 1 mile west on U.S. Highway No. 302 from the town of Naples and on the north side of the road 100 feet into the woods in Naples Township:

O1—1 inch to 0, mat of pine needles and twigs.
Ap—0 to 6 inches, dark-brown (10YR 3/3) fine sandy loam; moderate, fine, granular structure; very friable when moist; many roots; 10 percent coarse fragments; very strongly acid; clear, wavy boundary.
B21ir—6 to 15 inches, dark reddish-brown (5YR 3/3) and strong-brown (7.5YR 5/6) fine sandy loam; moderate, fine, granular structure; friable when moist; many roots; 10 percent coarse fragments; medium acid; abrupt, smooth boundary.
B22—15 to 18 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; many, coarse, distinct, dark reddish-brown (5YR 3/4) and olive-gray (5Y 5/2) mottles in lower part; moderate, medium, granular structure; friable when moist; a few roots; 10 percent coarse fragments; medium acid; abrupt, smooth boundary.
C1x—18 to 30 inches, grayish-brown (2.5Y 5/2) fine sandy loam; many, coarse, distinct, strong-brown (7.5YR 5/6) and yellowish-brown (10YR 5/6) mottles; moderate, thick, platy structure; very firm when moist; 5 to 10 percent coarse fragments; slightly acid; gradual, smooth boundary.
C2x—30 to 42 inches, olive (5Y 4/3) fine sandy loam; moderate, thick, platy structure; very firm when moist; 5 to 10 percent coarse fragments; slightly acid; gradual, smooth boundary.
C3x—42 to 60 inches, olive-gray (5Y 4/2) fine sandy loam; moderately thick, platy structure; very firm when moist; 10 percent coarse fragments; slightly acid.

The solum ranges from 18 to 26 inches in thickness, and depth to fragipan ranges from 18 to 26 inches. The content of coarse fragments ranges from 5 to 30 percent throughout the profile.

The Ap horizon, as well as its gravelly analogs, is loam or fine sandy loam. The B2 horizons, as well as their gravelly analogs, range from loam to sandy loam in texture. The Ap and B2 horizons range from very strongly acid to medium acid in reaction. The Cx horizons, as well as their gravelly analogs, range from loam to sandy loam. The Cx horizon ranges from strongly acid to slightly acid. The structure of this horizon is weak to moderate platy and massive.

Associated with the Peru soils in the landscape are the Canaan, Hermon, Ridgebury, and Whitman soils. Peru soils are similar to these soils, but Canaan soils are shallow. Hermon soils lack the fragipan of Peru soils. Ridgebury soils are poorly drained and Whitman soils are very poorly drained.

Peru fine sandy loam, 0 to 8 percent slopes (PkB).—This soil has the profile described as representative of the series. It is principally on broad crests of hills and ridges. Runoff is slow. Included in mapping are a few small areas of soils that have many stones on the surface. Also included are small areas of Hermon and Ridgebury soils and of steeper Peru soils.

This Peru soil can be used for hay, pasture, row crops, and woodland. If it is cultivated, artificial drainage is needed because of seasonal wetness. For woodland use, white pine, red pine, white spruce, and larch are suited. Because permeability is moderately slow in the substratum, this soil has severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Seasonal wetness is a moderate limitation on this soil for golf courses. Capability unit IIw–4; woodland group 3o1; wildlife group 2.

Peru fine sandy loam, 8 to 15 percent slopes (PkC).—This soil is on the sides of hills and ridges. Runoff is

medium to rapid. Included in mapping are a few small areas of soils that have many stones on the surface. Also included are small areas of Canaan and Hermon soils.

This Peru soil can be used for hay, pasture, row crops, and woodland. If it is cultivated, artificial drainage is needed because of seasonal wetness. Also, the erosion hazard is severe, and use of equipment is limited by steepness of slope. For woodland use, white pine, red pine, and larch are suitable for planting. Because permeability is moderately slow in the substratum, this soil has severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Seasonal wetness moderately limits the use of this soil for golf courses. Capability unit IIIew–4; woodland group 3o1; wildlife group 1.

Peru very stony fine sandy loam, 0 to 8 percent slopes (PlB).—This soil is on the broad crests of wooded ridges and hills. It has a profile similar to the one described as representative of the series, except that it has a surface mat of organic matter, a thinner surface layer, and a thicker subsoil in the upper part. Many stones, as much as 1 to 2 feet in diameter, are on the surface of this soil, but they are somewhat less numerous with depth. A few areas have large boulders on the surface. Included in mapping are small areas of Canaan, Hermon, and Ridgebury soils.

This Peru soil can be used for permanent pasture and woodland. White pine, red pine, white spruce, and larch are suitable for planting. Because permeability is moderately slow in the substratum, this soil has severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Seasonal wetness moderately limits the use of this soil for golf courses. Capability unit VIs–4; woodland group 3o1; wildlife group 12.

Peru very stony fine sandy loam, 8 to 15 percent slopes (PlC).—This soil is on the sides of wooded ridges and hills. This soil has a profile similar to the one described as representative for the series, except that it has a surface mat of organic matter, a thinner surface layer, and a thicker subsoil in the upper part. Many stones, as much as 1 to 2 feet in diameter, are on the surface of this soil, but they are somewhat less numerous with depth. A few areas have large boulders on the surface. Runoff is medium. Included in mapping are small areas of Canaan, Hermon, and Ridgeway soils.

This Peru soil can be used for permanent pasture and woodland. White pine, red pine, white spruce, and larch are suitable trees for planting. Because permeability is moderately slow in the substratum, this soil has severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Wetness moderately limits the use of this soil for wilderness tent sites. Capability unit VIs–4; woodland group 3o1; wildlife group 12.

Podunk Series

The Podunk series consists of deep, nearly level, moderately well drained, medium-textured soils. These soils formed in alluvial deposits and are on flood plains adjacent to streams and rivers.

A representative profile of a Podunk soil in a cultivated area has a surface layer of dark grayish-brown fine sandy loam 8 inches thick. The upper 10 inches of the subsoil is light olive-brown, friable fine sandy loam. The lower 8 inches of the subsoil is light olive-brown, friable fine sandy loam that has gray mottles. This layer is underlain by 34 inches of yellowish-brown to olive-gray, very friable to friable loamy fine sand that has gray, strong-brown, yellowish-brown, and dark-brown mottles.

Depth to bedrock is 5 feet or more. The water table is at a depth of 1 to 2½ feet in spring and during periods of heavy precipitation.

Many areas of Podunk soils are used for farming, but a few areas are wooded. Common species are speckled alder, black willow, red maple, and elm.

Representative profile of Podunk fine sandy loam, 0.75 mile east of New Gloucester on State Route 231 and 100 feet north of the side of road in New Gloucester Township:

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

B21—8 to 18 inches, light olive-brown (2.5Y 5/4) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

B22—18 to 26 inches, light olive-brown (2.5Y 5/4) fine sandy loam; many, coarse, distinct, gray (5Y 5/1) mottles; weak, fine, granular structure; friable when moist; a few roots; strongly acid; abrupt, smooth boundary.

IIC1—26 to 33 inches, yellowish-brown (10YR 5/6) loamy fine sand; many, coarse, distinct, gray (5Y 5/1) and strong-brown (7.5YR 5/6) mottles; single grain; loose when moist; strongly acid; abrupt, smooth boundary.

IIC2—33 to 60 inches, olive-gray (5Y 5/2) loamy fine sand; many, coarse, distinct, yellowish-brown (10YR 5/6) and dark-brown (10YR 3/3) mottles; single grain; loose when moist; medium acid.

The solum ranges from 20 to 40 inches in thickness. The Ap, B21, and B22 horizons range from fine sandy loam to sandy loam in texture. In undisturbed areas a thin organic mat is over an A1 horizon that is similar to the Ap horizon in color and texture, but it is thinner than the Ap horizon. In these areas the B21 horizon is somewhat thicker than the one described above. In the Ap horizon hue is 10YR or 2.5Y, value is 3 or 4, and chroma ranges from 2 to 4. In the B horizon hue ranges from 10YR to 5Y, and value and chroma range from 3 to 6. In the IIC horizon hue ranges from 10YR to 5Y, value ranges from 4 to 6, and chroma ranges from 2 to 6. The IIC horizon is mostly loamy fine sand, but it ranges to sand in places. The IIC horizon contains a few strata of gravel.

Associated with Podunk soils in the landscape are Limerick, Ondawa, Rumney, and Saco soils. Podunk soils are similar to these soils, but Ondawa soils are well drained and Rumney soils are poorly to somewhat poorly drained. In addition, the poorly drained Limerick soils and the very poorly drained Saco soils are silt loam or very fine sandy loam above the substratum.

Podunk fine sandy loam (Py).—This nearly level soil is on bottom lands adjacent to streams and rivers. Included in mapping are small areas of Deerfield, Ondawa, and Rumney soils.

Permeability ranges from moderately rapid to rapid in this soil, and runoff is slow. Available water capacity is high.

This Podunk soil can be used for row crops, hay, pasture, and woodland. If it is used for row crops, artificial drainage and adequate amounts of fertilizer and lime are needed. White pine, red pine, white spruce, and larch are suited to woodland use. This soil is subject to periodic flooding in spring, and limitations for most community

uses are very severe. Because permeability is moderately rapid to rapid in the substratum, limitations are severe or very severe on this soil for recreational purposes where septic tank systems are used for the disposal of sewage. Also, when used for this purpose, contamination of streams and ground water is likely to be a hazard. Capability unit IIw–6; woodland group 3o1; wildlife group 2.

Ridgebury Series

The Ridgebury series consists of deep, nearly level, poorly drained soils that formed in very firm, stony glacial till. These soils are in low-lying areas and on uplands in the northern, northwestern, and western parts of the county.

A representative profile of a Ridgebury soil in a wooded area has a 2-inch organic mat over a surface layer of very dark gray to gray fine sandy loam 6 inches thick. The upper 6 inches of the subsoil is grayish-brown, slightly firm fine sandy loam that has gray and light-gray mottles. The lower 6 inches of the subsoil is olive-brown, firm fine sandy loam that has olive-gray mottles. The substratum, or fragipan, is at a depth of 18 inches and is light olive-brown to olive-gray, very firm fine sandy loam that has yellowish-brown, gray, and olive-gray mottles.

Permeability is moderate above the fragipan and moderately slow within it. Available water capacity is high. The water table is at a depth of less than 1 foot in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more.

A few areas of Ridgebury soils were formerly farmed, but most areas are now wooded. Common species are white spruce, balsam fir, white pine, eastern hemlock, speckled alder, red maple, gray birch, and American elm.

Representative profile of Ridgebury very stony fine sandy loam, 0 to 3 percent slopes, in a wooded area 1 mile west of the junction of U.S. Highway No. 302 and an unnamed road that is 0.75 mile northwest of Naples, and 100 feet south of the unnamed road in Naples Township:

O1—2 inches to 0, mat of leaves, needles, and twigs.

A1—0 to 2 inches, very dark gray (10YR 3/1) fine sandy loam; moderate, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

A2—2 to 6 inches, gray (10YR 5/1) fine sandy loam; weak, thin, platy structure; friable when moist; many roots; 5 percent coarse fragments; strongly acid; clear, irregular boundary.

B21g—6 to 12 inches, grayish-brown (2.5Y 5/2) fine sandy loam; common, coarse, distinct, gray (5Y 6/1) and light-gray (5Y 7/1) mottles; weak, thin, platy structure; slightly firm; common roots; 5 percent coarse fragments; strongly acid; clear, wavy boundary.

B22g—12 to 18 inches, olive-brown (2.5Y 4/4) fine sandy loam; common, coarse, distinct, olive-gray (5Y 5/1) mottles; moderate, medium, platy structure; firm when moist; common roots; 5 percent coarse fragments; strongly acid; abrupt, smooth boundary.

C1x—18 to 28 inches, light olive-brown (2.5Y 5/4) fine sandy loam; common, coarse, distinct, yellowish-brown (10YR 5/6) and gray (5Y 6/1) mottles; weak, very coarse, prismatic structure, that parts to medium, platy structure; very firm when moist; 5 percent coarse fragments; medium acid; clear, smooth boundary.

C2x—28 to 36 inches, light olive-brown (2.5Y 5/4) fine sandy loam; many, coarse, distinct, olive-gray (5Y 5/2) and yellowish-brown (10YR 5/6) mottles; weak, very coarse, prismatic structure, that parts to weak, thick, platy structure; very firm when moist; 10 percent coarse fragments; medium acid; clear, smooth boundary.

C3x—36 to 60 inches, olive-gray (5Y 5/2) fine sandy loam; a few, distinct, yellowish-brown (10YR 5/6) mottles; massive; very firm when moist; 15 percent coarse fragments; medium acid.

The solum ranges from 10 to 20 inches in thickness, and depth to fragipan ranges from 10 to 20 inches. The content of coarse fragments ranges from 5 to 30 percent throughout the profile. The A1, A2, B21, B22, and Cx horizons, as well as their gravelly analogs, range from fine sandy loam to sandy loam in texture. The Cx horizons range from massive, to weak to moderate, very thin to thick platy in structure.

Associated with Ridgebury soils in the landscape are Hermon, Hollis, Paxton, Peru, Sebago, and Whitman soils. Ridgebury soils are similar to these soils, but Paxton soils are well drained, Woodbridge and Peru soils are moderately well drained, and Whitman soils are very poorly drained. Hermon soils lack the fragipan of Ridgebury soils, and they are well drained to somewhat excessively drained. Hollis soils are shallow. Sebago soils formed in organic deposits.

Ridgebury fine sandy loam, 0 to 3 percent slopes (RbA).—This soil is in depressions along drainageways and seepage areas. It has the profile described as representative of the series, except that it lacks a surface mat of organic matter, its surface layer is thicker, and the upper part of its subsoil is thinner. A few stones are on the surface. Runoff is slow. Included in mapping are small areas of Peru, Sebago, Whitman, and Woodbridge soils. Also included are small areas of rock outcrop and coarse-textured soils that lack a fragipan.

This Ridgebury soil can be used for hay, pasture, and woodland. If it is used for hay and pasture, artificial drainage is needed. If this soil is adequately drained, it can also be used for row crops. For woodland use, white pine and white spruce are suitable for planting, but seedling mortality is severe, and equipment limitations are severe because of wetness. In addition, windthrow hazard is severe because the fragipan restricts penetration of plant roots. Limitations are very severe on this soil for most community uses, principally because of a high water table and excessive wetness. Limitations are very severe for recreational uses because of excess wetness. This soil has few limitations for use as habitat for wetland wildlife. Capability unit IIIw–4; woodland group 4w1; wildlife group 3.

Ridgebury very stony fine sandy loam, 0 to 3 percent slopes (RgA).—This soil has the profile described as representative of the series. It is in depressions along drainageways and seepage areas. Many stones on the surface are as much as 1 to 2 feet in diameter, but they are somewhat less numerous with depth. Runoff is slow. Included in mapping are small areas of Peru, Sebago, Whitman, and Woodbridge soils. Also included are small areas of soils that have a few rock outcrops.

This Ridgebury soil can be used as woodland. White pine and white spruce are suitable for planting, but seedling mortality is high, and equipment limitations are severe because of wetness. In addition, the windthrow hazard is severe because the fragipan restricts penetration of plant roots. This soil is too stony and too wet for farming. Limitations are very severe for most community uses, principally because of a high water table and wetness. Limitations are very severe for recreational uses, princi-

pally because of wetness. This soil has few limitations for use as habitat for wetland wildlife. Capability unit VIIsw–4; woodland group 4w1; wildlife group 11.

Rock Land

Rock land (Ro) occurs in nearly level to very steep areas in which more than 50 percent of the material is exposed bedrock, and the remaining percentage is shallow stony material that resembles the material in the Canaan and Hollis soils. This land type is mainly on ridges on uplands in the northern and western parts of the county, but it is along coastal areas in places. Included in mapping are a few areas of Canaan and Hollis soils. Rock land is associated in the landscape with Canaan, Hermon, Hollis, and Paxton soils.

Rock land is not suited to farming or to woodland, because it lacks sufficient depth. Vegetation consists of a few scattered trees and of mosses and lichens. This mapping unit is used as scenic vistas, wildlife habitat, biological study areas, and trails for hiking. Capability unit VIIIs–1; woodland group 6x1; wildlife group 13.

Rumney Series

The Rumney series consists of deep, nearly level, poorly drained to somewhat poorly drained soils that are moderately coarse textured. These soils formed in alluvial deposits on flood plains adjacent to streams and rivers throughout the county.

A representative profile of a Rumney soil in a wooded area has a surface mat of undecomposed organic matter, 2 inches thick, over a surface layer of dark grayish-brown fine sandy loam 6 inches thick. The subsoil is 24 inches of light brownish-gray, very friable fine sandy loam that has gray and dark reddish-brown mottles. Below is 30 inches of very dark grayish-brown, loose loamy sand that has yellowish-brown mottles.

A water table is within 1 foot of the surface for most of the year. Depth to bedrock is 5 feet or more.

A few areas of Rumney soils are used for farming, but many areas are wooded. Common species are sedges, rushes, American elm, red maple, black willow, speckled alder, and balsam fir.

Representative profile of Rumney fine sandy loam, 500 feet west of Josies Brook outlet at the Saco River in Standish Township:

O1—2 inches to 0, undecomposed grasses, rushes, and sedges.

A1—0 to 6 inches, dark grayish-brown (2.5Y 4/2) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; very strongly acid; abrupt, smooth boundary.

Bg—6 to 30 inches, light brownish-gray (2.5Y 6/2) fine sandy loam; common, medium, distinct, gray (5Y 5/1) and dark reddish-brown (2.5YR 2/4) mottles; weak, fine, granular structure; very friable when moist; a few roots; strongly acid; clear, wavy boundary.

IIC—30 to 60 inches, very dark grayish-brown (2.5Y 3/2) loamy sand; a few, medium, distinct, yellowish-brown (10YR 5/4) mottles; single grain; loose when moist; medium acid.

The solum ranges from 22 to 36 inches in thickness. The A1, Bg, and IIC horizons range from strongly acid to slightly acid in reaction. The gravel content of the A1 and Bg horizons ranges from 0 to 15 percent. In the A1 horizon hue is 10YR or 2.5Y, value ranges from 3 to 6, and chroma is 1 or 2. In cultivated areas the Ap horizon is similar in color and in texture to the A1 horizon, but it is thicker. The Bg horizon in these areas is somewhat thinner than the one described above. In the Bg horizon hue ranges from 10YR to 5Y, value ranges from 3 to 6, and chroma is 1 or 2. The content of gravel in the IIC horizon ranges from 0 to 35 percent. The gravel in this horizon occurs as strata less than 5 inches thick.

Associated with Rumney soils in the landscape are Limerick, Ondawa, Podunk, and Saco soils. Rumney soils are similar to these soils, but Ondawa soils are well drained, and Podunk soils are moderately well drained. Also, the poorly drained Limerick soils and very poorly drained Saco soils are silt loam or very fine sandy loam above the substratum.

Rumney fine sandy loam (Ru).—This is the only Rumney soil mapped in the county. It is on bottom land adjacent to streams and rivers. Included in mapping are small areas of Limerick, Podunk, and Saco soils.

Permeability is moderate to moderately rapid, though this soil has a seasonal high water table. Runoff is slow, and available water capacity is high. Flooding occurs principally in spring, but in places areas are flooded during periods of heavy precipitation. This soil is wet throughout the year.

This Rumney soil can be used for hay, pasture, and woodland. It is too wet for row crops, even if drainage is provided. For hay and pasture, improved drainage is needed. For woodland use, white pine, white spruce, and white cedar are suitable for planting, but seedling mortality is high, and equipment limitations are severe because of wetness. In addition, windthrow hazard is severe because penetration of roots is restricted by a high water table. This soil is very severely limited for all community and recreational uses, principally because of a high water table and susceptibility to frequent flooding. Capability unit IIIw–6; woodland group 4w1; wildlife group 9.

Saco Series

The Saco series consists of deep, very poorly drained, nearly level, medium-textured soils. These soils formed in alluvial deposits on flood plains adjacent to major streams and rivers. In Cumberland County Saco soils are mapped only in the Limerick-Saco complex, described under the Limerick series.

A representative profile of a Saco soil has a surface layer of very dark gray silt loam 12 inches thick. The underlying material, from 12 to 24 inches, is dark-gray, friable silt loam that has yellowish-brown mottles. From 24 to 60 inches is gray, friable silt loam.

Permeability is moderate in this soil. Runoff is very slow, and depth to bedrock is 5 feet or more. A water table is at a depth of 1 foot for most of the year, and the soil is susceptible to frequent flooding.

Most areas of Saco soils are wooded, brushy, or grassy, but a few areas are used for farming. Common species are black willow, speckled alder, American elm, red maple, and water-tolerant shrubs and grasses.

Representative profile of Saco silt loam, in Limerick-Saco complex, along the Pleasant River where it is crossed by Libby Road in Gray Township:

A1—0 to 12 inches, very dark gray (10YR 3/1) silt loam; weak, medium, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

C1g—12 to 24 inches, dark-gray (10YR 4/1) silt loam; common, medium, faint, yellowish-brown (10YR 5/6) mottles; weak, fine, granular structure; friable when moist; many roots; very strongly acid; abrupt, smooth boundary.

C2g—24 to 60 inches, gray (5Y 6/1) silt loam; weak, moderate, granular structure; friable when moist; a few roots; medium acid.

The A1 horizon ranges from silt loam to very fine sandy loam. In the Cg horizons hue ranges from 10YR to 5Y, value ranges from 3 to 6, and chroma is 0 or 1. The Cg horizon ranges from silt loam to very fine sandy loam, but lenses of loamy fine sand, loamy very fine sand, or sandy loam as much as 2 inches thick occur in places. The content of gravel in the Cg horizons generally ranges from 0 to 3 percent. In places the gravel occurs in strata 1 to 2 inches thick.

Associated with Saco soils in the landscape are Limerick, Ondawa, Podunk, and Rumney soils. Saco soils are similar to these soils, but Ondawa soils are well drained, Podunk soils are moderately well drained, and Rumney and Limerick soils are poorly drained.

Saugatuck Series

The Saugatuck series consists of deep, somewhat poorly drained to poorly drained, nearly level, coarse-textured soils. These soils formed in glacial outwash deposits on old delta areas in the southern and eastern parts of the county.

A representative profile of a Saugatuck soil in a wooded area has a black organic mat, 1 inch thick, over a surface layer of gray loamy sand 6 inches thick. The upper 7 inches of the subsoil is very dusky-red, strongly cemented sand that has dark reddish-brown mottles. The lower 17 inches of the subsoil is dark reddish-brown, weakly cemented, massive sand that has yellowish-red mottles. The substratum, at a depth of 30 inches, is brown, loose sand.

A water table is at a depth of 1 foot in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more.

Most areas of Saugatuck soils are wooded. Vegetation is dominantly white spruce, balsam fir, gray birch, speckled alder, and white pine trees, and fern and blueberry bushes.

Representative profile of Saugatuck loamy sand, along Payne Road at the entrance of Scarboro Downs Racetrack in Scarborough Township:

O2—1 inch to 0, black (10YR 2/1) organic mat of decomposed leaves and twigs.

A2—0 to 6 inches, gray (10YR 5/1) loamy sand; single grain; loose when moist; many roots; very strongly acid; abrupt, smooth boundary.

B21hirm—6 to 13 inches, very dusky-red (2.5YR 2/2) sand; common, medium, distinct, dark reddish-brown (5YR 3/2) mottles; strongly cemented; massive, parting to moderate, thick, platy structure; a few roots between plates; very strongly acid; abrupt, wavy boundary.

B22irm—13 to 30 inches, dark reddish-brown (5YR 3/3) sand; many, medium, faint, yellowish-red (5YR 5/6) mottles; weakly cemented; massive, parting to moderate, thick, platy structure; a few roots between plates; strongly acid; abrupt, wavy boundary.

C—30 to 60 inches, brown (7.5YR 5/4) sand; single grain; loose; 10 percent gravel; strongly acid.

The solum ranges from 20 to 40 inches in thickness. The A2 horizon ranges from loamy sand to sand or to loamy fine sand. In the B2 horizons hue is 2.5YR or 5YR, value ranges from 2 to 6, and chroma ranges from 2 to 4. The B2 and C horizons range from medium sand to loamy sand. Cementation in the B2 horizons ranges from weak to strong. In the C horizon hue is 7.5YR or 10YR, value ranges from 4 to 7, and chroma is 3 or 4.

Associated with Saugatuck soils in the landscape are Au Gres, Deerfield, Scarboro, Sebago, Swanton, Whately, and Windsor soils. Saugatuck soils are similar to these soils, but Windsor soils are excessively drained, Deerfield soils are moderately well drained, and Scarboro soils are very poorly drained. Saugatuck soils have an ortstein layer that is lacking in Au Gres, Swanton, and Whately soils. Sebago soils formed in organic deposits, and the poorly drained Swanton and the very poorly drained Whately soils formed in glaciofluvial deposits over a substratum of marine or lacustrine silt and clay.

Saugatuck loamy sand ((Sd).—This is the only Saugatuck soil mapped in the survey area. It is on old delta areas. Included in mapping are small areas of Scarboro soils. Also included are a few areas that have a clay layer, at a depth of 24 to 40 inches, below the cemented subsoil.

Permeability is moderately rapid to slow in this soil, and runoff is slow. Available water capacity is low, but, because of a high water table, internal drainage is poor, and this soil generally is wet during most of the growing season.

If Saugatuck loamy sand is artificially drained, it can be used for hay and pasture. Locating suitable drainage outlets is a concern of management. If undrained, this soil is suited to limited pasture. This soil can also be used as woodland. White pine is suitable for planting, but seedling mortality is severe, and equipment limitations are severe because of wetness. Also, the windthrow hazard is severe because the roots of most plants are restricted to the zone above a high water table. Limitations are severe or very severe on this soil for all community and recreational uses, principally because of a high water table. Capability unit Vw–5; woodland group 4w1; wildlife group 3.

Scantic Series

The Scantic series consists of deep, nearly level, poorly drained, medium-textured soils that are underlain by fine-textured material. These soils formed in marine and lacustrine sediment. They are in old marine estuaries in the eastern and central parts of the county and in depressions around a few inland lakes.

A representative profile of a Scantic soil in a cultivated area has a surface layer of dark grayish-brown silt loam 8 inches thick that is underlain by 5 inches of olive-gray, friable heavy silt loam that has light olive-brown mottles. The upper 7 inches of the subsoil is olive-gray, firm heavy silt loam that has light olive-brown mottles, and the next 8 inches is olive-gray, firm heavy silty clay loam that has yellowish-brown mottles. The lower 4 inches of the subsoil is olive-gray, firm silty clay that has a few olive mottles. The substratum, at a depth of 32 inches, is olive-gray, firm clay that has a few dark-gray mottles.

A water table is at a depth of 1 foot during most of the year, and depth to bedrock is 5 feet or more.

A few areas of Scantic soils are farmed, but many areas are wooded. Common species are speckled alder, white pine, and black willow.

Representative profile of Scantic silt loam, on a big flat on the east side of Beech Ridge Road, 0.5 mile south of intersection with Holmes Road in Scarborough Township:

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) silt loam; moderate, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, wavy boundary.

A2g—8 to 13 inches, olive-gray (5Y 5/2) heavy silt loam; a few, fine, distinct, light olive-brown (2.5Y 5/6) mottles; moderate, fine and medium, granular structure; friable when moist; common roots; strongly acid; clear, irregular boundary.

B21g—13 to 20 inches, olive-gray (5Y 5/2) heavy silt loam; common, fine, distinct, light olive-brown (2.5Y 5/4) mottles; moderate, medium, blocky structure; firm when moist; a few roots; patchy pressure faces on peds; medium acid; abrupt, smooth boundary.

B22g—20 to 28 inches, olive-gray (5Y 4/2) heavy silty clay loam; common, fine, distinct, yellowish-brown (10YR 5/6) mottles; moderate, coarse, prismatic structure, parting to moderate, medium, blocky structure; firm when moist; medium acid; gradual, wavy boundary.

IIB3g—28 to 32 inches, olive-gray (5Y 4/2) silty clay; a few, fine, distinct, olive (5Y 5/6) mottles; moderate, medium, platy structure; firm when moist; patchy pressure faces on peds; prominent black stains on ped faces; slightly acid; gradual, wavy boundary.

IIC—32 to 60 inches, olive-gray (5Y 4/2) clay; a few, coarse, faint, dark-gray (5Y 4/1) mottles on faces of platy peds; weak, thick, platy structure; firm when moist; slightly acid.

The solum ranges from 25 to 40 inches in thickness. Reaction in the Ap, A1, A2g, and B21g horizons ranges from strongly acid to medium acid. In the Ap horizon hue ranges from 10YR to 5Y, value is 4 or 5, and chroma is 1 or 2. In uncultivated areas an A1 horizon ranges from 2 to 5 inches in thickness. This horizon is very dark gray (10YR 3/1) or very dark grayish brown (10YR 3/2), and its texture is similar to that of the Ap horizon. The A2g horizon ranges from loam to silt loam. The C horizon ranges from silty clay loam to clay. Mottling is less evident or is lacking in this horizon.

Associated with Scantic soils in the landscape are Biddeford, Buxton, Elmwood, Melrose, and Suffield soils. Scantic soils are similar to these soils, but Suffield soils are well drained, Buxton soils are moderately well drained to somewhat poorly drained, and Biddeford soils are very poorly drained. Also, the well-drained Melrose soils and the moderately well drained Elmwood soils are fine sandy loam over silty clay.

Scantic silt loam (Sn).—This is the only Scantic soil mapped in the county. It is in old marine estuaries and in depressions around a few inland lakes. Included in mapping are small areas of Buxton, Biddeford, and Swanton soils. Also included are small areas of soils that have a few stratified sandy layers in the subsoil and the substratum and small areas of soils around inland lakes that have stones on the surface.

This soil is wet thoughout the year. Permeability is moderate in the upper part of the horizon and slow to very slow in the lower part. Runoff is slow. Available water capacity is high.

If this Scantic soil is artifically drained, it can be used for hay and pasture. Locating suitable drainage outlets is a concern of management. If undrained, this soil is suited to limited pasture. For woodland use, white spruce, white cedar, and white pine are suited, but seedling mortality is severe, and equipment limitations are severe because of wetness. Also, the windthrow hazard is severe because the roots of most plants are restricted to the zone above a high water table. Limitations are severe or very severe for most community and recreational uses, principally because of a high water table. This soil is well suited to use as habitat for wetland wildlife. Capability unit IVw–7; woodland group 5w1; wildlife group 3.

460–637—74——3

Scarboro Series

The Scarboro series consists of deep, nearly level, very poorly drained, moderately coarse textured to coarse textured soils. These soils formed in glacial outwash. They are in old delta areas in the central and eastern parts of the county.

A representative profile of a Scarboro soil has a black organic mat, 2 inches thick, over a surface layer of black sandy loam 2 inches thick. This is underlain by 3 inches of gray, very friable sandy loam. The upper 15 inches of the substratum is light olive-gray, loose sand that has light olive-brown and gray mottles. The lower 40 inches of the substratum is light brownish-gray, loose sand that has strong-brown and olive-gray mottles.

The water table is at a depth of 1 foot during most of the year. The depth to bedrock is 5 feet or more.

Most areas of Scarboro soils are in woods and grasses. Common species are white spruce, spruce, balsam fir, and speckled alder, as well as marshgrass and other wetland vegetation.

Representative profile of Scarboro sandy loam, 2 miles east of State Route 113 on the north side of Richville Road in Standish Township:

O2—2 inches to 0, black organic material.

A1—0 to 2 inches, black (5YR 2/1) sandy loam; weak, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

A2g—2 to 5 inches, gray (5Y 6/1) sandy loam; weak, fine, granular structure; very friable when moist; many roots; strongly acid; abrupt, smooth boundary.

C1g—5 to 20 inches, light olive-gray (5Y 6/2) sand; many, coarse, distinct, light olive-brown (2.5Y 5/6) and gray (10YR 6/1) mottles; single grain; loose when moist; many roots; very strongly acid; gradual, smooth boundary.

C2g—20 to 60 inches, light brownish-gray (2.5Y 6/2) sand; many, coarse, distinct, strong-brown (7.5YR 5/6) and olive-gray (5Y 5/2) mottles; single grain; loose when moist; 10 percent gravel; strongly acid.

Reaction ranges from strongly acid to very strongly acid throughout the profile. The A1 horizon ranges from sandy loam to fine sandy loam, and the A2 horizon ranges from sandy loam to sand. In the C horizons hue ranges from 10YR to 5Y, value ranges from 4 to 6, and chroma is 2 or less. The C horizon ranges from loamy sand to sand.

Associated with Scarboro soils in the landscape are Au Gres, Deerfield, Saugatuck, and Windsor soils. Scarboro soils are similar to these soils, but Windsor soils are excessively drained, Deerfield soils are moderately well drained, and Au Gres soils are somewhat poorly drained. Scarboro soils lack the cemented ortstein layer that is present in Saugatuck soils.

Scarboro sandy loam (So).—This is the only Scarboro soil mapped in the county. It is in depressions in old delta areas. Included in mapping are small areas of soil that have a clay substratum. Also included are small areas of Walpole, Deerfield, and Au Gres soils.

This Scarboro soil is wet throughout the year. Permeability is rapid to very rapid, but internal drainage is affected by a high water table. Runoff is slow.

If drainage is provided, Scarboro sandy loam can be used for hay and pasture. Locating suitable drainage outlets is a concern of management. Trees that commonly grow in the areas are not suitable for planting, because seedling mortality is severe. In addition, equipment limitations are severe because of wetness, and the windthrow hazard is severe because the roots of most plants are restricted to the zone above a water table. This soil is well

suited to habitat for wetland wildlife. Limitations are very severe for all community and recreational uses, principally because of the high water table. Capability unit Vw–5; woodland group 5w1; wildlife group 4.

Sebago Series

The Sebago series consists of deep, nearly level, very poorly drained organic soils. These soils formed in decomposed herbaceous and woody deposits. They are in basins of old glacial lakes, in marine estuaries, in glacial upland depressional areas, and in marsh areas adjacent to coastal areas.

A representative profile of a Sebago soil has an organic layer of decomposed material, 24 inches thick, that is about 60 percent fibers. The next 12 inches is an organic layer of black, moderately decomposed material that is about 70 percent fibers. Below this is a layer of very dark gray, slightly decomposed organic material, 24 inches thick, that is about 80 percent fibers.

A water table is near the surface throughout the year. Ponding occurs during periods of heavy rainfall and during spring runoff. The depth to bedrock or mineral soil is 5 feet or more.

Common species on Sebago soils are shrubs, cattails, reeds, and sedges, as well as balsam fir, black spruce, tamarack, red maple, and cedar trees.

Representative profile of a Sebago mucky peat, on the east side of State Route 35 about 1 mile south of the Naples-Harrison town line and about 500 feet out onto the bog from the highway at the outlet in Naples Township:

Oe1—0 to 24 inches, black (5YR 2/1) rubbed and pressed; about 60 percent fibers and 50 percent rubbed; massive; nonsticky when wet; sodium pyrophosphate (6/3); about 50 percent herbaceous fibers and about 50 percent woody fibers; strongly acid (pH 5.2 in water); abrupt, smooth boundary.

Oe2—24 to 36 inches, black (5YR 2/1) rubbed and pressed; about 70 percent fibers and 50 percent rubbed; massive; nonsticky when wet; sodium pyrophosphate (6/3); about 70 percent herbaceous fibers and about 30 woody fibers; mineral content is about 20 percent; strongly acid (pH 5.3 in water); abrupt, smooth boundary.

Oi1— 36 to 60 inches, very dark gray (10YR 3/1) rubbed and pressed; about 80 percent fibers and 50 percent rubbed; massive; nonsticky when wet; sodium pyrophosphate (8/1); about 50 percent herbaceous fibers and 50 percent woody fibers; estimated mineral content, 40 percent; strongly acid (pH 5.1 in water).

Herbaceous and woody fibers generally are throughout the profile, and either of these fibers are likely to range from 20 to 80 percent, by volume. Slightly decomposed fragments of twigs, branches, logs, and a few stumps range from 5 to 15 percent, by volume, throughout the profile. Fragments range from about one-fourth inch in diameter to about 2 feet in diameter. Reaction ranges from extremely acid to strongly acid throughout the profile when the soil is placed in water, but it generally is less than pH 5 throughout the profile.

The surface tier is 12 to 24 inches thick and is black. In the surface tier hue is 10YR or 5YR, value is 2, and chroma is 1. When the soil is air dried, the value or chroma, or both, increase by one or two units. The structure of the surface tier generally is massive, but it ranges to weak to moderate, very fine to medium, granular. In a few areas, the surface tier contains 6 to 12 inches of sphagnum moss, in which hue is 10YR, value ranges from 3 to 5, and chroma ranges from 2 to 6.

In the subsurface and bottom tiers hue ranges from 10YR to 5YR, value ranges from 2 to 4, and chroma ranges from 1 to 4. These colors become slightly darker upon brief exposure to air. When the soil is air dried, the value or chroma, or both, increase by one or two units, and an increasing amount of fibric material also produces lighter colors. The subsurface and bottom tiers consist mainly of hemic material, but fibric materials occupy from one-third to less than one-half the thickness of the subsurface and bottom tiers.

Associated with Sebago soils in the landscape are Deerfield, Hinckley, Saugatuck, Walpole, and Windsor soils. In places Sebago soils are also associated with Hollis, Ridgebury, and Whitman soils. Sebago soils are similar to all of these soils, but the excessively drained Hinckley soils and somewhat poorly drained to poorly drained Walpole soils formed in sandy and gravelly outwash deposits, and the excessively drained Windsor soils, the moderately well drained Deerfield soils, and the somewhat poorly drained to poorly drained Saugatuck soils formed in sandy glacial outwash deposits. Also, the somewhat excessively drained, shallow Hollis soils, the poorly drained Ridgebury soils, and the very poorly drained Whitman soils formed in glacial till.

Sebago mucky peat (Sp).—This is the only Sebago soil mapped in the county. It is in basins of old glacial lakes, old marine estuaries, and in upland depressions throughout the county. Runoff is very slow, and this soil generally is saturated throughout the year. Included in mapping are small areas of Ridgebury, Saugatuck, Walpole, and Whitman soils.

This Sebago soil is not used mainly for farming, but it provides food and shelter for wildlife, and a few trees have value for commercial purposes. It can be used for cranberry bogs if drainage is provided and vegetation is removed. Possible frost damage because of elevation is a limitation. Capability unit VIIw–9; woodland group, not suited to growing trees for commercial purposes; wildlife group 14.

Suffield Series

The Suffield series consists of deep, well-drained, moderately sloping to steep, medium-textured soils. These soils formed in marine and lacustrine sediment on terraces in the central lowland and eastern parts of the county.

A representative profile of a Suffield soil in a cultivated area has a surface layer of dark grayish-brown silt loam 6 inches thick. The upper 3 inches of the subsoil is dark yellowish-brown, friable silt loam, and the next layer is 14 inches of grayish-brown, friable silt loam. The lower 10 inches of the subsoil is olive-gray, firm silty clay. The substratum, at a depth of 33 inches, is light olive-gray, firm silty clay.

Permeability is moderate in the silty layers and slow in the clayey layers. Available water capacity is high. Depth to bedrock is 5 feet or more.

Many areas of Suffield soils were formerly farmed, but they are now wooded. Common species are white pine, red pine, white spruce, and balsam fir.

Representative profile of Suffield silt loam, 8 to 15 percent slopes, eroded, along State Route 114 near the bridge that crosses the Stroudwater River in Gorham Township:

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; moderate, medium, granular structure; friable when moist; many roots; medium acid; abrupt, smooth boundary.

B21—6 to 9 inches, dark yellowish-brown (10YR 4/4) silt loam; weak, fine, granular structure; friable when

moist; many roots; slightly acid; abrupt, wavy boundary.

B22—9 to 15 inches, grayish-brown (2.5Y 5/2) silt loam; weak, coarse, granular structure; friable when moist; common roots; slightly acid; abrupt, irregular boundary.

B23—15 to 23 inches, grayish-brown (2.5Y 5/2) silt loam, weak, coarse, granular structure; friable when moist; a few roots; slightly acid; abrupt, wavy boundary.

IIB3—23 to 33 inches, olive-gray (5Y 5/2) on ped faces, olive-gray (5Y 4/2) in ped interiors, and olive (5Y 4/3) where crushed silty clay; weak, coarse, prismatic structure, that parts to strong, medium, subangular blocky structure; firm when in place, friable when moved, sticky and plastic when wet; light olive-brown (2.5Y 5/4) and dark grayish-brown (2.5Y 5/2) very fine sand and silt coatings on prism faces; slightly acid; clear, wavy boundary.

IIC—33 to 60 inches, light olive-gray (5Y 6/2) on ped faces; olive (5Y 4/3) in ped interiors, and olive-gray (5Y 4/2) when crushed silty clay; weak, coarse, prismatic structure; firm when in place, friable when moved, sticky and plastic when wet; olive (5Y 4/4) very fine sand and silt coatings on prism faces; slightly acid.

The thickness of the silty layer over the contrasting more clayey layer ranges from 18 to 40 inches. Reaction ranges from strongly acid to slightly acid in the upper part of the solum, to a depth of about 23 inches, and from medium acid to neutral in the lower part of the solum.

In undisturbed areas an A1 horizon, 1 to 2 inches thick, is present. It is dark gray (10YR 3/1) or very dark brown (10YR 3/2). In places, undisturbed areas have a 1- to 2-inch A2 horizon. In the B21 horizon hue is 10YR, 7.5YR, or 2.5Y; value is 4 or 5; and chroma ranges from 4 to 8. In the B22, B23, IIB3, and IIC horizons hue is 2.5Y or 5Y, value ranges from 4 to 6, and chroma ranges from 2 to 4. The IIB3 and IIC horizons range from silty clay to silty clay loam.

Associated with Suffield soils in the landscape are Biddeford, Buxton, and Scantic soils. Suffield soils are similar to these soils, but Buxton soils are moderately well drained to somewhat poorly drained, Scantic soils are poorly drained, and Biddeford soils are very poorly drained.

Suffield silt loam, 8 to 15 percent slopes, eroded (SuC2).—This soil has the profile described as representative of the series. It is on the sides of terraces adjacent to streams, rivers, and drainageways. Runoff is medium to rapid. Included in mapping are small areas of less steep Buxton soils. Also included are small areas of Hartland and Belgrade soils.

This Suffield soil can be used for cultivated crops, hay, pasture, and woodland. If it is cultivated, erosion is a severe hazard. Steepness of slope moderately limits the use of equipment for cultivated crops and hay. For woodland use, white pine, red pine, white spruce, and larch are suitable for planting, but seedling mortality is moderate. In addition, equipment limitations are moderate because of steepness of slope, and the erosion hazard is moderate. Because of slow permeability in the clay layers, this soil has very severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Steepness of slope is a moderate limitation on this soil for use as golf courses. Capability unit IIIe–7; woodland group 5c1; wildlife group 1.

Suffield silt loam, 15 to 25 percent slopes, eroded (SuD2).—This soil is on the sides of dissected terraces adjacent to streams, rivers, and drainageways. It has a profile similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are thinner. Runoff is rapid.

This Suffield soil can be used for pasture and woodland. It is too steep for cultivated crops and hay. For woodland use, white pine, red pine, white spruce, and larch are suitable for planting, but seedling mortality is moderate. In addition, equipment limitations are severe because of steepness of slope. The erosion hazard is severe. Because of slow permeability in the clay layers and steepness of slope, this soil has very severe limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. Limitations are very severe for most recreational uses, principally because of steepness of slope. Capability unit IVe–7; woodland group 5c2; wildlife group 10.

Suffield silt loam, 25 to 45 percent slopes, eroded (SuE2).—This soil is on the lower part of the slopes of strongly dissected terraces adjacent to streams, rivers, and drainageways. It has a profile similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are thinner. Runoff is very rapid.

This Suffield soil is too steep for farming. It is suitable for use as woodland. White pine, red pine, white spruce, and larch are suitable for planting. If used for this purpose, seedling mortality is moderate, equipment limitations are severe, mainly because of steepness of slope, and the erosion hazard is severe. Because of slow permeability in the clay layers and steepness of slope, this soil has very severe limitations for use as homesites where septic tank systems are needed for disposal of sewage. Limitations are very severe for most recreational uses, principally because of steepness of slope. Capability unit VIe–7; woodland group 5c2; wildlife group 10.

Swanton Series

The Swanton series consists of deep, nearly level, poorly drained to somewhat poorly drained soils. These soils formed in moderately coarse textured sediment of glaciofluvial origin over fine-textured sediment of marine and lacustrine origin. They are in depressions in the coastal part of the county.

A representative profile of a Swanton soil in a cultivated area has a surface layer of dark grayish-brown fine sandy loam, 9 inches thick, that is underlain by 5 inches of light olive-gray, friable fine sandy loam that has light olive-brown mottles. The upper 5 inches of the subsoil is olive-gray, friable fine sandy loam that contains olive-brown mottles. It is underlain by 9 inches of olive, friable fine sandy loam that has yellowish-brown mottles and by 4 inches of light olive-gray, friable fine sandy loam that has yellowish-brown mottles. The lower 13 inches of the subsoil is olive, firm silty clay that contains olive-brown mottles. The substratum, at a depth of 45 inches, is olive, firm silty clay that contains light olive-brown mottles.

A water table is at a depth of 1 foot during most of the year. Depth to bedrock is 5 feet or more.

A few areas of Swanton soils were formerly farmed, but most areas are now wooded. Common species are speckled alder, red maple, American elm, gray birch, and white pine.

Representative profile of Swanton fine sandy loam, 1,000 feet south of the North Yarmouth-Yarmouth town

line and 1,000 feet east of Sligo Road in Yarmouth Township:

Ap—0 to 9 inches, dark grayish-brown (10YR 4/2) fine sandy loam; moderate, fine, granular structure; friable when moist; many roots; strongly acid; abrupt, smooth boundary.

A2g—9 to 14 inches, light olive-gray (5Y 6/2) fine sandy loam; common, medium, distinct, light olive-brown (2.5Y 5/6) mottles; weak, very fine, granular structure; friable when moist; many roots; strongly acid; abrupt, wavy boundary.

B21g—14 to 19 inches, olive-gray (5Y 5/2) fine sandy loam; many, coarse, distinct, light olive-brown (2.5Y 5/6) mottles; weak, very fine, granular structure; friable when moist; strongly acid; clear, wavy boundary.

B22g—19 to 28 inches, olive (5Y 5/4) fine sandy loam; common, coarse, distinct, yellowish-brown (10YR 5/8) mottles; moderate, medium, subangular blocky structure; friable when moist; strongly acid; clear, wavy boundary.

A'2g—28 to 32 inches, light olive-gray (5Y 6/2) fine sandy loam; common, coarse, distinct, yellowish-brown (10YR 5/8) mottles; weak, thin, platy structure; friable when moist; strongly acid; abrupt, wavy boundary.

IIB'g—32 to 45 inches, olive (5Y 5/3) silty clay; common, medium, distinct, olive-brown (2.5Y 4/4) mottles; weak, medium, platy structure; firm when moist; a few silt films and black stains on faces of peds; slightly acid; clear, wavy boundary.

IICg—45 to 60 inches, olive (5Y 4/3) silty clay; common, medium, distinct, light olive-brown (2.5Y 5/4) mottles; weak, thick, platy structure; firm when moist; a few silt films and black stains on faces of peds; neutral.

The moderately coarse textured material ranges from 18 to 40 inches in thickness. Reaction ranges from strongly acid to medium acid in the moderately coarse textured material and from medium acid to neutral in the finer textured material.

In the Ap horizon hue is 10YR or 7.5YR, value is 2 to 4, and chroma is 1 or 2. In undisturbed areas an A1 horizon is similar in color and in texture to the Ap horizon, but it is thinner. In the B2g horizons hue ranges from 10YR to 5Y, value ranges from 3 to 5, and chroma ranges from 1 to 4. The B2g horizons range from fine sandy loam to sandy loam.

Associated with Swanton soils in the landscape are Elmwood, Melrose, and Whately soils. Swanton soils are similar to these soils, but Melrose soils are well drained, Elmwood soils are moderately well drained, and Whately soils are very poorly drained.

Swanton fine sandy loam (Sz).—This is the only Swanton soil mapped in the county. It is in depressional areas. Included in mapping are small areas of Elmwood, Scantic, and Whately soils.

Permeability is moderate to moderately rapid above the fine-textured material and very slow within it. Runoff is slow, and available water capacity is high. This soil is wet throughout the year, and it receives large quantities of runoff from surrounding soils when it rains.

This Swanton soil can be used for row crops, hay and pasture, and as woodland if drainage is provided. Locating suitable drainage outlets is a concern of management. For woodland use, white pine and white spruce are suitable for planting, but seedling mortality is severe. In addition, equipment limitations are severe because of wetness, and the windthrow hazard is severe because the roots of most plants are restricted to the zone above the water table. This soil has very severe limitations for most community uses, principally because of a high water table. It also has very severe limitations for all recreational uses, principally because of excess wetness and a high water table. This soil is well suited to habitat for wetland wildlife and to small ponds. Capability unit IIIw–8; woodland group 5w1; wildlife group 3.

Tidal Marsh

Tidal marsh (Tm) is adjacent to the coast, mostly in the Dunstan marshes (Scarboro) and near Cousins River (Yarmouth). The areas are nearly level. This land type has an organic surface layer that extends to a depth of about 2 feet. Below this layer, to a depth of 5 feet or more, are layers of grayish-brown silt, clay, and sand that vary in thickness. Vegetation consists mainly of grasses that can tolerate salt.

Runoff is slow on this land type. Tidal marsh is subject to flooding daily by tidal water. It is not suitable for farming because of a high concentration of salt. Tidal marsh is useful mainly as feeding and breeding areas for birds and other wildlife. Capability unit VIIIw–99; woodland group, not suited to growing trees for commercial purposes; wildlife group 14.

Walpole Series

The Walpole series consists of deep, nearly level, poorly drained to somewhat poorly drained, moderately coarse textured to coarse textured soils. These soils formed in glacial outwash sediment. They are in lowland areas adjacent to eskers (horsebacks) in the central, northern, and western parts of the county.

A representative profile of a Walpole soil in a cultivated area has a surface layer of very dark grayish-brown fine sandy loam 8 inches thick. The subsoil is 12 inches of light brownish-gray, friable fine sandy loam that has strong-brown and light olive-gray mottles in the upper part and brownish-yellow mottles in the lower part. The substratum, at a depth of 20 inches, is light yellowish-brown to olive-gray, friable to loose loamy sand and gravelly loamy sand that has strong-brown and dark-brown mottles.

A water table is at a depth of 1 foot in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more.

Many areas of Walpole soils are wooded, but a few areas are used for farming. Common species are American elm, red maple, white pine, eastern hemlock, balsam fir, and white spruce.

Representative profile of Walpole fine sandy loam, 1 mile south on U.S. Highway No. 302 from the junction with Methodist Road and 100 feet east of the road in Westbrook Township:

Ap—0 to 8 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; moderate, medium, granular structure; friable when moist; many roots; strongly acid; abrupt, wavy boundary.

B21—8 to 14 inches, light brownish-gray (10YR 6/2) fine sandy loam; common, fine, distinct, strong-brown (7.5YR 5/6) and light olive-gray (5Y 6/2) mottles; weak, medium, granular structure; friable when moist; common roots; strongly acid; abrupt, wavy boundary.

B22—14 to 20 inches, light brownish-gray (2.5Y 6/2) fine sandy loam; many, fine, distinct, brownish-yellow (10YR 6/8) mottles; weak, fine, granular structure; friable when moist; very few roots; strongly acid; clear, wavy boundary.

IIC1—20 to 26 inches, light yellowish-brown (2.5Y 6/4) loamy sand; many, coarse, distinct, strong-brown (7.5YR 5/6) mottles; weak, fine, granular structure; friable when moist; strongly acid; clear, wavy boundary.

IIC2—26 to 60 inches, olive-gray (5Y 5/2) gravelly loamy sand; common, coarse, prominent, dark-brown (7.5YR 4/4) mottles; single grain; loose when moist; 20 percent gravel; strongly acid.

The solum ranges from 18 to 28 inches in thickness. The content of coarse fragments in the solum ranges from 0 to 20 percent, but it is as much as 40 percent in the IIC horizons.

The Ap horizon, as well as its gravelly analogs, ranges from fine sandy loam to sandy loam. In undisturbed areas an A1 horizon that is similar in color and texture to the Ap horizon is present, but it is slightly thinner. The B21 horizon is slightly thicker in undisturbed areas. In the B2 horizons hue is 10YR or 2.5Y, value ranges from 4 to 6, and chroma is 2 or less. The B2 horizons, as well as their gravelly analogs, range from fine sandy loam to sandy loam in texture. In the IIC horizons hue ranges from 10YR to 5Y, value ranges from 4 to 6, and chroma ranges from 1 to 6. The IIC horizons, as well as their gravelly analogs, range from sand to loamy sand in texture.

Associated with Walpole soils in the landscape are the Deerfield, Hinckley, Scarboro, and Sebago soils. Walpole soils are similar to these soils, but Hinckley soils are excessively drained, Deerfield soils are moderately well drained, and Scarboro soils are very poorly drained. Sebago soils formed in deep organic deposits.

Walpole fine sandy loam (Wa).—This is the only Walpole soil mapped in the county. It is in low-lying areas adjacent to eskers (horsebacks). Included in mapping are small areas of Deerfield and Scarboro soils.

This soil is wet throughout the year. Runoff is slow. Permeability is moderately rapid in the subsoil and rapid in the substratum. Internal drainage is affected by a high water table.

This Walpole soil can be used for row crops, pasture, and hay if artificial drainage is provided. It can also be used as woodland. White pine, white spruce, and white cedar are suitable for planting, but seedling mortality is severe. In addition, equipment limitations are severe because of wetness, and the windthrow hazard is severe because of a shallow root zone. This soil has severe or very severe limitations for all community and recreational uses, principally because of a high water table. It is well suited to habitat for wetland wildlife. Capability unit IIIw–5; woodland group 4w1; wildlife group 3.

Whately Series

The Whately series consists of deep, nearly level, very poorly drained soils. These soils formed in moderately coarse textured sediment of glaciofluvial origin over fine-textured sediment of marine and lacustrine origin. They are in depressions in the coastal part of the county.

A representative profile of a Whately soil in an uncultivated area has an organic mat of very dark grayish brown, 2 inches thick, over a surface layer of very dark grayish-brown fine sandy loam, 7 inches thick, that contains a few gray spots. This layer is underlain by 12 inches of gray, loose sandy loam that has light olive-brown mottles. The upper 7 inches of the subsoil is gray, firm silty clay loam that has light brown mottles. The lower 12 inches of the subsoil is olive-gray, firm silty clay that has yellowish-brown mottles. The substratum, at a depth of 38 inches, is olive-gray, firm clay that has light olive-brown mottles.

A water table is at a depth of 1 foot throughout the year. Depth to bedrock is 5 feet or more.

Nearly all areas of Whately soils are in unproductive woodland and brush. Common species are speckled alder, red maple, American elm, and sedges and wetland brush.

Representative profile of Whately fine sandy loam, along State Route 114 across from Scarboro High School in Scarborough Township:

O2—2 inches to 0, very dark grayish-brown (10YR 3/2) decomposed organic material; very strongly acid; abrupt, smooth boundary.

A1—0 to 7 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; a few gray (10YR 5/1) spots; weak, fine, granular structure; friable when moist; many roots; medium acid; abrupt, smooth boundary.

A2g—7 to 19 inches, gray (5Y 5/1) sandy loam; common, fine, distinct, light olive-brown (2.5Y 5/4) mottles in the lower part; single grain; loose when moist; common roots; medium acid; abrupt, wavy boundary.

IIB21g—19 to 26 inches, gray (10YR 5/1) silty clay loam; many, medium, distinct, light-brown (7.5YR 6/4) mottles; weak, medium, subangular blocky structure; firm when in place, friable when moved; a few roots; slightly acid.

IIB22g—26 to 38 inches, olive-gray (5Y 5/2) silty clay; many, medium, distinct, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blocky structure; firm when in place, friable when moved; a few silt films on faces of peds; slightly acid; clear, wavy boundary.

IICg—38 to 60 inches, olive-gray (5Y 5/2) clay; common, medium, distinct, light olive-brown (2.5Y 5/4) mottles; massive; firm when moist; a few silt films on faces of peds; neutral.

The moderately coarse textured materials range from 18 to 40 inches in thickness. Reaction ranges from medium acid to slightly acid in the moderately coarse textured material and from slightly acid to neutral in the fine-textured material.

In the A1 horizon hue ranges from 10YR to 5Y, value ranges from 3 to 5, and chroma is 1 or 2. In the IIBg horizons hue ranges from 10YR to 5Y, value ranges from 4 to 6, and chroma is 1 or 2. The IICg horizon ranges from silty clay loam to clay in texture.

Associated with Whately soils in the landscape are Elmwood, Melrose, and Swanton soils. Whately soils are similar to these soils, but Melrose soils are well drained, Elmwood soils are moderately well drained, and Swanton soils are poorly drained to somewhat poorly drained.

Whately fine sandy loam (Wg).—This is the only Whately soil mapped in the county. It is in depressional areas. Included in mapping are small areas of Sebago and Swanton soils. Also included are small areas of soils that are finer textured at a depth of more than 48 inches.

Permeability is moderate to moderately rapid above the fine-textured material and very slow within it. Runoff is very slow, and available water capacity is high. This soil is wet throughout the year, and it receives large quantities of runoff from surrounding soils when it rains.

This Whately soil can be used for limited hay and pasture if drainage is provided. Locating suitable drainage outlets is a concern of management. This soil is too wet for row crops, even if drainage is provided. It is not suited to trees. Limitations are very severe for almost all community uses, principally because of a high water table. Limitations are very severe for most recreational uses, principally because of excess surface water frequently throughout the year, as well as a high water table. This soil is well suited to habitat for wetland wildlife and to small ponds. Capability unit Vw–8; woodland

group, not suited to growing trees for commercial purposes; wildlife group 4.

Whitman Series

The Whitman series consists of deep, nearly level, very poorly drained, moderately coarse textured and medium textured soils. These soils formed in firm stony glacial till. They are in depressional areas on uplands in the northern and western parts of the county.

A representative profile of a Whitman soil in an uncultivated area has a black organic mat, 4 inches thick, over a surface layer of very dark brown fine sandy loam 6 inches thick. The upper 12 inches of the substratum consists of grayish-brown to light olive-gray, friable sandy loam that has brown, grayish-brown, and light reddish-brown mottles. Below is 42 inches of olive-gray and gray, very firm fine sandy loam to sandy loam that has dark-brown mottles. This very firm substratum is a fragipan.

A water table is at a depth of 1 foot most of the year. Depth to bedrock is 5 feet or more. Common species are eastern hemlock, balsam fir, speckled alder, American elm, and white spruce.

Representative profile of Whitman fine sandy loam, 100 feet south of State Route 117, 1 mile west of Crooked River in Harrison Township:

O2—4 inches to 0, black (5YR 2/1) decomposed organic material; many roots; abrupt, wavy boundary.

A1—0 to 6 inches, very dark brown (10YR 2/2) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; medium acid; abrupt, wavy boundary.

C1g—6 to 10 inches, grayish-brown (10YR 5/2) sandy loam; many, coarse, distinct, brown (7.5YR 5/2) and grayish-brown (2.5Y 5/2) mottles; weak, fine, granular structure; friable when moist; many roots; 5 percent coarse fragments; medium acid; clear, wavy boundary.

C2g—10 to 18 inches, light olive-gray (5Y 6/2) sandy loam; many coarse, prominent, light reddish-brown (2.5YR 6/4) mottles; medium, fine, granular structure; friable when moist; many roots; 10 percent coarse fragments; medium acid; abrupt, smooth boundary.

C3x—18 to 30 inches, olive-gray (5Y 5/2) gravelly fine sandy loam; many, fine, prominent, dark-brown (7.5YR 3/2) mottles; moderate, thick, platy structure; very firm when moist; 20 percent coarse fragments; medium acid; gradual, smooth boundary.

C4x—30 to 60 inches, gray (5Y 6/1) gravelly sandy loam; a few, fine, prominent, dark-brown (7.5YR 4/4) mottles; weak, thick, platy structure; very firm when moist; 20 percent coarse fragments; medium acid.

Fragipan is at a depth of 10 to 25 inches. The content of coarse fragments ranges from 5 to 35 percent throughout the profile. Reaction ranges from medium acid to neutral in the solum and in the substratum.

The A1 horizon, as well as its gravelly analogs, ranges from fine sandy loam to silt loam. In the Cx horizons hue is 2.5Y or 5Y, value ranges from 4 to 6, and chroma is 0, 1, or 2. The Cg and Cx horizons, as well as their gravelly analogs, range from sandy loam to loam.

Associated with Whitman soils in the landscape are the Canaan, Hollis, Paxton, Peru, Ridgebury, Sebago, and Woodbridge soils. Whitman soils are similar to these soils, but Hollis and Canaan soils are shallow. In addition, Peru and Woodbridge soils are moderately well drained, Ridgebury soils are poorly drained, and Paxton soils are well drained. Sebago soils formed in organic deposits.

Whitman fine sandy loam (Wh).—This is the only Whitman soil mapped in the county. It is in upland depressional areas. Included in mapping are small areas of Ridgebury and Sebago soils. Also included are small areas of soils that have many stones, 1 foot in diameter, on the surface.

This Whitman soil is wet throughout the year. Runoff is very slow. Permeability is moderate to moderately rapid above the fragipan and moderately slow to slow in the fragipan. Available water capacity is high.

This soil can be used for limited hay and pasture if artificial drainage is provided. It is too wet for row crops, even if drained. It generally is not suited to woodland, and if it is used for this purpose, seedling mortality is severe, and wetness severely limits the use of woodland equipment. The hazard of windthrow is severe because of a shallow root zone caused by a high water table. This soil has very severe limitations for most community uses, principally because of a high water table and excessive wetness. Excess surface water very severely limits all recreational uses. Capability unit Vw–4; woodland group 5w1; wildlife group 4.

Windsor Series

The Windsor series consists of deep, excessively drained, nearly level to strongly sloping, coarse-textured soils. These soils formed in glacial outwash deposits. They are on terraces adjacent to many streams and rivers throughout the county.

A representative profile of a Windsor soil in a cultivated area has a surface layer of dark-brown loamy sand 6 inches thick. The upper 9 inches of the subsoil is brown, very friable loamy sand, and the lower 11 inches of the subsoil is light olive-brown, loose loamy sand. The substratum, at a depth of 26 inches, is pale-yellow, loose medium sand.

Permeability is rapid or very rapid in these soils, and available water capacity is low. Depth to bedrock is 5 feet or more.

Many areas of Windsor soils were formerly cultivated, but they are now wooded. Common species are northern hardwoods, white pine, red pine, and eastern hemlock.

Representative profile of Windsor loamy sand, 0 to 8 percent slopes, 0.25 mile south of the Gorham-Scarboro town line on the south side of Burnham Road in Scarborough Township:

Ap—0 to 6 inches, dark-brown (10YR 3/3) loamy sand; weak, medium, granular structure; very friable when moist; many roots; strongly acid; abrupt, smooth boundary.

B21—6 to 15 inches, brown (10YR 5/3) loamy sand; weak, fine, granular structure; very friable when moist; a few roots; strongly acid; gradual, wavy boundary.

B22—15 to 26 inches, light olive-brown (2.5Y 5/6) loamy sand; single grain; loose when moist; a few roots in upper 4 inches; strongly acid; gradual, wavy boundary.

C—26 to 60 inches, pale-yellow (2.5Y 7/4) medium sand; single grain; loose when moist; strongly acid.

The solum ranges from 24 to 30 inches in thickness. Reaction ranges from strongly acid to very strongly acid throughout the profile. The content of gravel in the solum ranges from 0 to 5 percent and from 0 to 10 percent in the C horizon.

The Ap horizon ranges from loamy sand to loamy fine sand. In the B21 horizon hue ranges from 7.5YR to 2.5Y, value is 4 or 5, and chroma ranges from 3 to 8. The B21 horizon ranges from loamy sand to loamy fine sand. In the B21 horizon hue is 10YR or 2.5Y, value ranges from 5 to 7, and chroma ranges

from 2 to 6. The B22 horizon ranges from loamy sand to fine sand. In the C horizon hue is 5Y, 10YR, or 2.5Y; value ranges from 5 to 7; and chroma ranges from 1 to 4. The C horizon ranges from medium sand to fine sand.

Associated with Windsor soils in the landscape are Au Gres, Deerfield, Saugatuck, Scarboro, and Sebago soils. Windsor soils are similar to these soils, but Deerfield soils are moderately well drained, Au Gres soils are somewhat poorly drained, and Scarboro soils are very poorly drained. Windsor soils lack the ortstein layer of Saugatuck soils. Sebago soils formed in deep organic deposits.

Windsor loamy sand, 0 to 8 percent slopes (WmB).—This soil has the profile described as representative of the series. It is on the top of terraces adjacent to streams and rivers. Runoff is slow. Included in mapping are small areas of Hinckley, Deerfield, and Au Gres soils. Also included are small areas of soils that have thin lenses of clay.

This Windsor soil can be used for row crops, pasture, and hay, and as woodland. For row crops, irrigation is needed because of low available water capacity. Low available water capacity also limits the use of this soil for hay and pasture. This soil does respond well to fertilizer.

For woodland use, white pine and red pine are suitable for planting, but seedling mortality is severe. This soil has slight limitations for use as homesites that have public sewage disposal. Because of possible ground-water contamination from septic effluent, this soil has moderate limitations for use as homesites where septic tank systems must be installed. This soil has slight limitations for use as wilderness tent sites. Capability unit IIIs–5; woodland group 5s1; wildlife group 5.

Windsor loamy sand, 8 to 15 percent slopes (WmC).—This soil is on the side of terraces adjacent to streams and rivers. Runoff is medium. Included in mapping are small areas of moderately steep and gently sloping Windsor soils and small areas of Hinckley soils.

This Windsor soil can be used for hay, pasture, row crops, and woodland. If this soil is used for row crops, irrigation is needed because of low available water capacity. Low available water capacity limits the use of this soil for hay and pasture and measures to conserve soil moisture should be used. This soil does not hold fertilizer well. For woodland, white pine and red pine are suitable for planting, but seedling mortality is severe. This soil has slight limitations for use as homesites that have public sewage disposal. Because ground water is likely to become contaminated from septic effluent, this soil has moderate limitations for use as homesites where septic tank systems must be installed for the disposal of sewage. This soil has slight limitations for use as wilderness tent sites. Capability unit IVs–5; woodland group 5s1; wildlife group 5.

Windsor loamy sand, 15 to 30 percent slopes (WmD).—This soil is on the lower part of irregular slopes of terraces adjacent to streams and rivers. It has a profile similar to the one described as representative of the series, except that its surface layer and the upper part of its subsoil are thinner. Runoff is rapid. Included in mapping are small areas of gently sloping, steep, and very steep Windsor soils and small areas of Hinckley soils.

This Windsor soil can be used for pasture and as woodland, but if it is used for pasture, droughtiness is a problem during dry periods. For woodland, white pine and red pine are suitable for planting, but seedling mortality is severe, and equipment limitations are moderate because of strong slopes. Strong slopes severely limit use of this soil for homesites where septic tank systems must be installed for the disposal of sewage, and they severely or very severely limit it for most recreational uses. Capability unit VIs–5; woodland group 5s2; wildlife group 8.

Woodbridge Series

The Woodbridge series consists of deep, moderately well drained, nearly level to moderately sloping, moderately coarse textured and medium textured soils. These soils formed in very firm stony glacial till. They are on hills and ridges throughout the county.

A representative profile of a Woodbridge soil in a wooded area has a surface layer of very dark grayish-brown fine sandy loam, 2 inches thick, that is underlain by a layer of grayish-brown, very friable fine sandy loam 1 inch thick. The upper 13 inches of subsoil is dark-brown or brown, very friable fine sandy loam. The lower 4 inches of the subsoil is light olive-brown, friable fine sandy loam that has dark-brown and brownish-yellow mottles. The substratum, at a depth of 20 inches, is olive-gray, very firm fine sandy loam that has strong-brown and yellowish-brown mottles. The substratum is a fragipan.

Permeability is moderately rapid above the fragipan and moderately slow within it. Available water capacity is high. A water table is at a depth of 1 to 2½ feet in spring and during periods of heavy precipitation. Depth to bedrock is 5 feet or more. Many areas of these soils are farmed, but most areas are wooded. Common species are white spruce, white pine, eastern hemlock, and balsam fir.

Representative profile of Woodbridge very stony fine sandy loam, 0 to 8 percent slopes, 0.3 mile west of Dry Mills on the East Raymond Road from the junction with North Raymond Road and on the south side of the road 100 feet into the woods in Gray Township:

A1—0 to 2 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; moderate, fine, granular structure; very friable when moist; many roots; 5 percent coarse fragments; strongly acid; clear, broken boundary.

A2—2 to 3 inches, grayish-brown (10YR 5/2) fine sandy loam; weak, fine, granular structure; very friable when moist; many roots; 5 percent coarse fragments; strongly acid; clear, broken boundary.

B21—3 to 6 inches, dark-brown (7.5YR 4/4) fine sandy loam; weak, fine, granular structure; very friable when moist; many roots; 5 percent coarse fragments; strongly acid; clear, irregular boundary.

B22—6 to 16 inches, brown (10YR 5/3) fine sandy loam; weak, fine, granular structure; friable when moist; many roots; 5 to 10 percent coarse fragments; strongly acid; clear, smooth boundary.

B23—16 to 20 inches, light olive-brown (2.5Y 5/4) fine sandy loam; many, coarse, distinct, dark-brown (7.5YR 3/2) and brownish-yellow (10YR 6/6) mottles; moderate, fine, granular structure; friable when moist; many roots; 5 to 10 percent coarse fragments; medium acid; clear, smooth boundary.

Cx—20 to 60 inches, olive-gray (5Y 5/2) fine sandy loam; many, coarse, distinct, strong-brown (7.5YR 5/8) and yellowish-brown (10YR 5/6) mottles; moderate, thick, platy structure; very firm when moist; thin, very fine, sandy coating between plates; 15 percent coarse fragments; medium acid.

Depth to fragipan ranges from 16 to 36 inches. The solum ranges from 16 to 36 inches in thickness. Reaction ranges from strongly acid to medium acid throughout the profile. The

content of coarse fragments ranges from 0 to 30 percent throughout the profile.

The Ap horizon, as well as its gravelly analogs, ranges from fine sandy loam to loam. In the B21 horizon hue is 10YR or 7.5YR, value ranges from 3 to 5, and chroma ranges from 3 to 8. In the B22 and B23 horizons, hue is 10YR or 2.5Y, value ranges from 4 to 6, and chroma is 3 to 6. The B2 horizons, as well as their gravelly analogs, range from fine sandy loam to loam. Distinct or prominent mottles are in the B23 horizon and are present in the lower part of the B22 horizon in places. In the Cx horizon hue is 2.5Y and 5Y, value ranges from 4 to 6, and chroma ranges from 2 to 4. The Cx horizon, as well as its gravelly analogs, ranges from fine sandy loam to sandy loam. The structure ranges from weak to moderate, thin to very thick platy, or it is massive.

Associated with Woodbridge soils in the landscape are the Canaan, Hermon, Hollis, Lyman, Paxton, Ridgebury, and Whitman soils. Woodbridge soils are similar to these soils, but Paxton soils are well drained, Ridgebury soils are poorly drained, and Whitman soils are very poorly drained. Also, Canaan, Hollis, and Lyman soils are shallow. Hermon soils lack a fragipan that is present in Woodbridge soils.

Woodbridge fine sandy loam, 0 to 8 percent slopes (WrB).—This soil is principally on the broad crests of hills and ridges. It has a profile similar to the one described as representative of the series, except that its surface layer is thicker and lighter, and the upper part of its subsoil is thinner. Most stones on the surface of this soil have been removed to prepare it for cultivation, but a few small areas have many stones on the surface. Runoff is slow. Included in mapping are small areas of Paxton and Ridgebury soils. Also included are areas of soils that lack a fragipan, and areas of moderately sloping Woodbridge soils.

This Woodbridge soil can be used for hay, pasture, row crops, and woodland. Artificial drainage is needed because of seasonal wetness. For woodland, white pine, red pine, and larch are suitable for planting. This soil is severely limited for use as homesites that have onsite septic sewage disposal, principally because of slow permeability in the substratum. It is moderately limited for use as golf courses, principally because of seasonal wetness. This soil has slight limitations for small excavated ponds. Capability unit IIw–4; woodland group 3o1; wildlife group 2.

Woodbridge fine sandy loam, 8 to 15 percent slopes (WrC).—This soil is principally on the sides of ridges. It has a profile similar to the one described as representative for the series, except that the surface layer is thicker and lighter, and the upper part of the subsoil is thinner. Most stones on the surface of this soil have been removed to prepare it for cultivation, but a few small areas have many stones on the surface. Runoff is medium to rapid. Included in mapping are small areas of Paxton and Hollis soils and areas of gently sloping Woodbridge soils.

This Woodbridge soil can be used for hay, pasture, row crops, and woodland. Artificial drainage is needed because of seasonal wetness. If this soil is cultivated, erosion is a hazard. The use of equipment is somewhat limited because of steepness of slope. For woodland, white pine, red pine, and larch are suitable for planting. Principally because of seepage and moderately slow permeability in the substratum, this soil has very severe limitations for use as homesites where septic tank systems must be installed for sewage disposal. Seasonal wetness, steepness of slope, and seepage are severe or very severe limitations for most recreational uses. Capability unit IIIew–4; woodland group 3o1; wildlife group 1.

Woodbridge very stony fine sandy loam, 0 to 8 percent slopes (WsB).—This soil has the profile described as representative of the series. It is principally on broad crests of wooded ridges. Many stones, 1 to 2 feet in diameter, are on the surface of this soil, but they are less numerous with depth. A few areas have large boulders on the surface. Runoff is slow. Included in mapping are small areas of stony Paxton and Ridgebury soils.

This Woodbridge soil can be used for permanent pasture and woodland. White pine, red pine, and larch are suitable for planting. Because of moderately slow permeability in the fragipan, this soil has severe limitations for use as homesites where septic tank systems must be installed for sewage disposal. Capability unit VIs–4; woodland group 3o1; wildlife group 12.

Woodbridge very stony fine sandy loam, 8 to 15 percent slopes (WsC).—This soil is on the sides of wooded ridges. Many stones, 1 to 2 feet in diameter, are on the surface of this soil, but they are less numerous with depth. A few areas have large boulders on the surface. Runoff is medium to rapid. Included in mapping are small areas of gently sloping Woodbridge soils, a few areas of soils that lack a fragipan, small areas of Paxton soils, and a few rock outcrops.

This Woodbridge soil can be used for permanent pasture and woodland. White pine, red pine, and larch are suitable for planting. Because of seepage and moderately slow permeability in the fragipan, this soil has very severe limitations for use as homesites where septic tank systems must be installed for sewage disposal. Capability unit VIs–4; woodland group 3o1; wildlife group 12.

Use and Management of the Soils

This section explains the system of capability classification used by the Soil Conservation Service and gives estimated yields of the principal crops and pasture grasses grown in the county. It also contains information on the use and management of the soils in the county as woodland, as wildlife habitat, in engineering, and in town and country planning.

To find the capability classification, woodland suitability classification, and wildlife suitability classification of a given soil, refer to the "Guide to Mapping Units" at the back of this survey. The use and management of individual soils for crops and pasture are discussed in the section "Descriptions of the Soils." Table 3, in the section "Use of the Soils for Woodland," gives information useful in the management of woodland. Table 4, in the section "Use of the Soils for Wildlife Habitat," gives information about the suitability of the soils for elements of wildlife habitat. Tables 5, 6, and 7, in the section "Engineering Uses of the Soils," give information concerning soil properties significant in engineering. Table 8, in the section "Town and Country Planning," rates the limitations of the soils for specified uses.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are

used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for farming, woodland, or engineering.

In the capability system, all kinds of soil are grouped at three levels: the capability class, the subclass, and the unit. These are discussed in the following paragraphs.

Capability Classes are the broadest grouping and are designated by Roman numerals I through VIII. In class I are the fewest soils that have limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, so shallow, or otherwise so limited that they do not produce worthwhile yields of crops, forage, or wood products.

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, but not in Cumberland County, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, woodland, or wildlife.

Capability Units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–4 or IIIe–6. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

The eight classes in the capability system and the subclasses and units in Cumberland County are described in the list that follows. The capability classification of each individual soil is given at the end of the soil description and in the "Guide to Mapping Units." Cut and fill land and Made land were not given a capability classification.

460-637—74——4

Class I. Soils that have few limitations that restrict their use.
- Unit I–6. Nearly level, deep, well-drained fine sandy loams that formed in alluvium; on flood plains.

Class II. Soils that have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Subclass IIe. Soils subject to moderate erosion if they are not protected.
  - Unit IIe–4. Gently sloping, deep, well-drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.
  - Unit IIe–7. Gently sloping, deep, well-drained very fine sandy loams that formed in marine and lacustrine sediment; on terraces.
- Subclass IIw. Soils that have moderate limitations because of excess water.
  - Unit IIw–4. Nearly level to gently sloping, deep, moderately well-drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.
  - Unit IIw–7. Nearly level to gently sloping, deep, well-drained very fine sandy loams and silt loams that formed in marine and lacustrine sediment; on terraces.
  - Unit IIw–8. Nearly level to undulating, deep, moderately well drained fine sandy loams that formed in glaciofluvial sediment over marine and lacustrine sediment; on terraces.
- Subclass IIs. Soils moderately limited by droughtiness.
  - Unit IIs–3. Gently sloping, deep, well-drained to somewhat excessively drained sandy loams that formed in granitic glacial till; on uplands.
  - Unit IIs–5. Gently sloping, deep, somewhat excessively drained fine sandy loams that formed in glacial outwash deposits; on outwash terraces.

Class III. Soils that have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Subclass IIIe. Soils subject to severe erosion if they are cultivated and not protected.
  - Unit IIIe–1. Gently sloping to undulating, shallow, somewhat excessively drained sandy loams and fine sandy loams that formed in glacial till; on uplands.
  - Unit IIIe–4. Moderately sloping, deep, well-drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.
  - Unit IIIe–7. Moderately sloping, deep, well-drained, eroded silt loams and very fine sandy loams that formed in marine and lacustrine sediment; on terraces.
  - Unit IIIe–8. Moderately sloping, deep, well-drained fine sandy loams that formed in glaciofluvial sediment over fine-textured marine and lacustrine sediment; on terraces.
- Subclass IIIew. Soils that are subject to severe erosion and are also severely limited by excess water.
  - Unit IIIew–4. Moderately sloping, deep, moderately well drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.

Unit IIIew–7. Moderately sloping to rolling, deep, moderately well drained to somewhat poorly drained very fine sandy loams and silt loams that formed in marine and lacustrine sediment; on terraces.

Subclass IIIes. Soils that are subject to severe erosion and droughtiness.

Unit IIIes–3. Moderately sloping, deep, well-drained to somewhat excessively drained sandy loams that formed in glacial till; on uplands.

Unit IIIes–5. Moderately sloping, deep, somewhat excessively drained fine sandy loams that formed in glacial outwash deposits; on outwash terraces.

Unit IIIes–57. Gently undulating, deep, excessively drained and well-drained gravelly sandy loams and silt loams that formed in glacial outwash and in marine and lacustrine sediment; on terraces.

Subclass IIIw. Soils that have severe limitations because of excess water.

Unit IIIw–4. Nearly level, deep, poorly drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.

Unit IIIw–5. Nearly level to gently sloping, deep, moderately well drained loamy sands that formed in glacial outwash sediment; on terraces.

Unit IIIw–6. Nearly level, deep, poorly drained to somewhat poorly drained fine sandy loams that formed in alluvium; on flood plains.

Unit IIIw–8. Nearly level, deep, poorly drained to somewhat poorly drained fine sandy loams that formed in glaciofluvial sediment over fine-textured sediment of marine and lacustrine origin; on terraces.

Subclass IIIs. Soils severely limited by droughtiness.

Unit IIIs–5. Nearly level to gently sloping, deep, excessively drained, gravelly sandy loams and loamy sands that formed in glacial outwash deposits; on the tops of eskers and on terraces.

Class IV. Soils that have very severe limitations that reduce the choice of plants, require very careful management, or both.

Subclass IVe. Soils subject to very severe erosion if they are cultivated and not protected.

Unit IVe–1. Moderately sloping, shallow, somewhat excessively drained sandy loams and fine sandy loams that formed in glacial till; on uplands.

Unit IVe–4. Strongly sloping, deep, well-drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.

Unit IVe–7. Strongly sloping, deep, well-drained, eroded silt loams and very fine sandy loams that formed in marine and lacustrine sediment; on terraces.

Subclass IVes. Soils that are subject to very severe erosion and droughtiness.

Unit IVes–3. Strongly sloping, deep, well-drained to somewhat excessively drained sandy loams that formed in glacial till; on uplands.

Unit IVes–57. Moderately sloping, deep, somewhat excessively drained and well-drained gravelly sandy loams and silt loams that formed in glacial outwash and in marine and lacustrine sediment; on terraces.

Subclass IVw. Soils very severely limited by excess wetness.

Unit IVw–5. Nearly level, deep, somewhat poorly drained loamy sands that formed in glacial outwash deposits; on old deltas.

Unit IVw–7. Nearly level, deep, poorly drained silt loams that formed in marine and lacustrine sediment; in old marine estuaries and in depressions around inland lakes.

Subclass IVs. Soils very severely limited by droughtiness.

Unit IVs–5. Moderately sloping, deep, excessively drained gravelly sandy loams and loamy sands that formed in glacial outwash deposits; on eskers and on terraces.

Class V. Soils that are not likely to erode but have other limitations, impractical to remove, that restrict their use largely to pasture, woodland, or wildlife.

Subclass Vw. Soils too wet for cultivation; drainage generally not feasible.

Unit Vw–4. Nearly level, deep, very poorly drained fine sandy loams that have a fragipan and that formed in glacial till; on uplands.

Unit Vw–5. Nearly level, deep, somewhat poorly drained to poorly drained loamy sands that have a weakly cemented subsoil and that formed in glacial outwash deposits; on old delta areas.

Unit Vw–8. Nearly level, deep, very poorly drained fine sandy loams that formed in glaciofluvial sediment over marine and lacustrine sediment; in depressions on terraces.

Class VI. Soils that have severe limitations that make them generally unsuited to cultivation and restrict their use largely to pasture, woodland, or wildlife.

Subclass VIe. Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.

Unit VIe–1. Strongly sloping, shallow, somewhat excessively drained fine sandy loams that formed in glacial till; on uplands.

Unit VIe–7. Steep, deep, well-drained, eroded silt loams that formed in marine and lacustrine sediment; on terraces.

Subclass VIw. Soils severely limited by excess water and generally unsuitable for cultivation.

Unit VIw–6. Nearly level, deep, poorly drained and very poorly drained silt loams that formed in alluvium; on flood plains.

Unit VIw–7. Nearly level, deep, very poorly drained silt loams that have a silty clay subsoil and that formed in marine and lacustrine sediments; in old marine estuaries and around inland lakes.

Subclass VIs. Soils generally unsuitable for cultivation and limited for other uses by their available moisture capacity, stones, or other features.

Unit VIs–1. Gently sloping to undulating and moderately sloping to strongly sloping, shal-

low, somewhat excessively drained very rocky sandy loams and very rocky fine sandy loams that formed in glacial till; on uplands.

Unit VIs–3. Gently sloping to steep, deep, well-drained to somewhat excessively drained very stony sandy loams that formed in granitic glacial till; on uplands.

Unit VIs–4. Nearly level to strongly sloping, deep, well drained and moderately well drained very stony fine sandy loams that have a fragipan and that formed in glacial till; on uplands.

Unit VIs–5. Strongly sloping, deep, excessively drained gravelly sandy loams and loamy sands that formed in glacial outwash deposits; on eskers and on terraces.

Unit VIs–57. Strongly sloping, deep, somewhat excessively drained and well-drained gravelly sandy loams and silt loams that formed in glacial outwash and in marine and lacustrine sediment; on terraces.

Class VII. Soils that have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture, woodland, or wildlife.

Subclass VIIw. Soils very severely limited by excess water.

Unit VIIw–9. Nearly level, deep, very poorly drained mucky peats that formed in decomposed herbaceous and woody deposits; in depressions.

Subclass VIIs. Soils very severely limited by moisture capacity, stones, or other soil features.

Unit VIIs–1. Strongly sloping to very steep, shallow, somewhat excessively drained very rocky sandy loams and very rocky fine sandy loams that formed in glacial till; on uplands.

Unit VIIs–3. Moderately sloping to very steep, deep, well-drained to somewhat excessively drained extremely stony sandy loams that formed in granitic glacial till; on uplands.

Subclass VIIsw. Soils that are very severely limited by stoniness and by excess water.

Unit VIIsw–4. Nearly level, deep, poorly drained, very stony fine sandy loams that have a fragipan and that formed in glacial till; on uplands.

Class VIII. Soils and landforms that have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes.

Subclass VIIIw. Extremely wet marshy land.

Unit VIIIw–99. Tidal marsh.

Subclass VIIIs. Rock land, Dune land, or Coastal beaches that have little potential for commercial production of vegetation.

Unit VIIIs–1. Rock land.

Unit VIIIs–5. Coastal beaches; Dune land.

Estimated Yields

Table 2 shows the estimated average yield per acre of the principal crops and pasture plants of Cumberland County under two levels of management. In any given year yields may be higher or lower than the average because of varying weather conditions and varying management practices. The estimates are based on experiments made by the Department of Plant and Soil Sciences at the University of Maine and on field observations made by people who have had experience with the crops and soils of this county.

The figures in columns A of table 2 represent yields obtained in an average growing season under the management followed by most farmers in the area. Crop yields from the records of farmers and others were used as a basis for these estimates.

The figures in columns B represent yields that can be expected in a favorable growing season and under improved or high-level management. This level of management includes applying lime and fertilizer in amounts indicated by soil tests; using a good cropping system; managing crop residue well; disposing of excess water where needed; controlling runoff and erosion; controlling weeds, brush, diseases, and insects; preparing the seedbed properly; and selecting crop varieties suited to the soil and to this survey area.

The soils and land types not listed in table 2 generally are not used for crops or pasture.

Use of the Soils for Woodland [3]

Approximately 85 percent of Cumberland County is covered by woods. This vast wooded area, intermittently broken by farmsteads and recreational and urban areas, provides the basic raw products for employment of several thousand people and contributes materially to the economy of the area.

The woods of Cumberland County are well stocked with desirable kinds of trees, and about half is under good management that includes pruning, thinning, and weeding. Information pertaining to soil-woodland capability and woodland management is given in table 3.

The well-stocked woodlands provide sufficient raw materials for varied wood industries. There are numerous commercial saw mills specializing in pine and spruce building materials, bolter mills using birch and maple, saw mills specializing in oak ship timbers, and mills specializing in furniture stock.

Four broad woodland cover types prevail throughout the survey area. White pine is the most important and prevails over the largest area. Conditions for growth are near optimum in the central area and part of the western area. About 40 percent of the wooded area is under this cover type. Northern hardwoods, consisting of birch, beech, and maple, is the second most important woodland type, and it covers approximately 30 percent of the wooded area. The western part and higher elevations in the central part are under this cover. White pine-red oak type makes up about 20 percent of the area and is in the central and southern part. This area is the prime source of oak for ship timbers. The red spruce and balsam fir cover type dominates the coastal area and the low flying bog soils. About 10 percent of the wooded area is under this cover type.

[3] Prepared with the assistance of CLIFF FOSTER, district forester, State of Maine Forestry Department.

TABLE 2.—*Estimated average acre yields of principal*

[Columns A show yields to be expected under ordinary management; columns B show yields to be expected under improved management. generally are not used for crops or pasture and are not listed in this table: Bo, CeE, Ck, Du, Gp, HhD, HkC, HkE, HlD, HnD, HsE, their suitability for crops]

Soil	Silage corn		Apples		Potatoes	
	A	B	A	B	A	B
	Tons	*Tons*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Au Gres loamy sand		16				
Belgrade very fine sandy loam, 0 to 8 percent slopes,	14	24				
Belgrade very fine sandy loam, 8 to 15 percent slopes eroded	12	20				
Buxton silt loam, 3 to 8 percent slopes	14	22				
Buxton silt loam, 8 to 15 percent slopes, eroded		20				
Canaan sandy loam, 3 to 8 percent slopes		14				
Canaan sandy loam, 8 to 15 percent slopes		12				
Canaan very rocky sandy loam, 3 to 8 percent slopes						
Canaan very rocky sandy loam, 8 to 20 percent slopes						
Deerfield loamy sand, 0 to 3 percent slopes		16				
Deerfield loamy sand, 3 to 8 percent slopes		16				
Elmwood fine sandy loam, 0 to 8 percent slopes	14	22			300	450
Hartland very fine sandy loam, 3 to 8 percent slopes	14	28			400	650
Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	12	22				
Hartland very fine sandy loam, 15 to 25 percent slopes, eroded						
Hermon sandy loam, 3 to 8 percent slopes		16		650		450
Hermon sandy loam, 8 to 15 percent slopes		14		650		400
Hermon sandy loam, 15 to 25 percent slopes				650		
Hermon very stony sandy loam, 3 to 8 percent slopes				650		
Hermon very stony sandy loam, 8 to 15 percent slopes				650		
Hinckley gravelly sandy loam, 3 to 8 percent slopes		12				
Hinckley gravelly sandy loam, 8 to 15 percent slopes						
Hinckley-Suffield complex, 3 to 8 percent slopes		12				
Hinckley-Suffield complex, 8 to 15 percent slopes						
Hollis fine sandy loam, 3 to 8 percent slopes		15		450		
Hollis fine sandy loam, 8 to 15 percent slopes		14		450		
Hollis fine sandy loam, 15 to 25 percent slopes						
Hollis very rocky fine sandy loam, 3 to 8 percent slopes						
Hollis very rocky fine sandy loam, 8 to 20 percent slopes						
Limerick portion of Limerick-Saco complex, 0 to 3 percent	14	20				
Lyman fine sandy loam, 3 to 8 percent slopes	10	14		450		
Lyman fine sandy loam, 8 to 15 percent slopes	10	12		450		
Lyman very rocky fine sandy loam, 3 to 8 percent slopes						
Lyman very rocky fine sandy loam, 8 to 20 percent slopes						
Melrose fine sandy loam, 8 to 15 percent slopes	12	22			300	500
Merrimac fine sandy loam, 3 to 8 percent slopes	12	18			300	450
Merrimac fine sandy loam, 8 to 15 percent slopes	10	16			250	400
Ondawa fine sandy loam	16	26			400	550
Paxton fine sandy loam, 3 to 8 percent slopes	14	24	550	1,000	350	550
Paxton fine sandy loam, 8 to 15 percent slopes	12	22	550	1,000	350	500
Paxton fine sandy loam, 15 to 25 percent slopes	10	20	300	450		
Paxton very stony fine sandy loam, 3 to 8 percent slopes			450	750		
Paxton very stony fine sandy loam, 8 to 15 percent slopes			450	900		
Paxton very stony fine sandy loam, 15 to 25 percent slopes						
Peru fine sandy loam, 0 to 8 percent slopes	14	20	300	500	300	450
Peru fine sandy loam, 8 to 15 percent slopes	12	18	300	500	250	400
Peru very stony fine sandy loam, 0 to 8 percent slopes			300	500		
Peru very stony fine sandy loam, 8 to 15 percent slopes			300	500		
Podunk fine sandy loam	16	24			350	500
Ridgebury fine sandy loam, 0 to 3 percent slopes		16				
Rumney fine sandy loam		20				
Saco portion of Limerick-Saco complex						
Saugatuck loamy sand						
Scantic silt loam		16				
Scarboro sandy loam						
Suffield silt loam, 8 to 15 percent slopes eroded	12	20				
Swanton fine sandy loam	12	18				
Walpole fine sandy loam	12	18				
Whately fine sandy loam						
Whitman fine sandy loam						
Windsor loamy sand, 0 to 8 percent slopes		14				

See footnote at end of table.

crops under two levels of management

Absence of a figure indicates the soil is not suited to the crop or the crop is not commonly grown on it. The following soils and land types LzE, RgA, Ro, Sp, SuD2, SuE2, and Tm. The land types Cu and Md are not listed because onsite investigation is needed to determine

Hay						Pasture			
Tall grass		Alfalfa-grass		Clover-grass		Permanent bluegrass		Tall grass and legume	
A	B	A	B	A	B	A	B	A	B
Tons	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]
	3.0		3.0		2.5		100		170
1.5	4.5	2.5	4.5	2.5	4.0	90	170	150	255
1.5	3.5	2.0	3.5	2.0	3.0	70	170	140	200
2.5	4.5	1.5	3.5	2.0	3.5	70	170	120	200
2.5	4.5	1.5	3.5	2.0	3.5	70	170	120	200
	2.0		2.5		2.5	30	114	70	145
	2.0				2.0	30	114	50	115
						30	108		
						30	108		
1.5	3.5	1.5	3.0	1.5	3.0	110	150		200
1.5	3.5	1.5	3.0	1.5	3.0	110	150		200
2.5	4.0	1.5	3.5	2.0	4.0				230
2.5	4.5	3.0	5.0	2.5	4.5	120	190	170	285
2.0	4.0	2.5	4.0	2.0	3.5	100	170	150	230
						80	150		
1.0	3.0	1.5	4.0	1.5	3.0	114	170	150	230
1.0	3.0	1.5	4.0	1.5	3.0	114	170	150	230
	2.5	1.0	3.5	1.0	2.5	85	135		200
						85	135		
						85	135		
			2.5		2.5	60	120	90	145
						50	100		
			2.5		2.5	60	120	90	145
						50	100		
1.5	2.5	2.0	3.5	1.5	3.0	90	130	115	200
1.5	2.0	1.5	3.0	1.5	2.5	80	130	115	170
						70	110	80	
						90	130		
						80	130		
1.5	4.0			1.5	3.5	50	140		200
1.0	2.0	1.0	3.0	1.0	2.5	90	150	110	170
1.0	2.0	1.0	3.0	1.0	2.5	80	150	110	170
						80	130		
						70	110		
2.0	4.0	2.0	4.5	2.0	4.5	110	170	150	255
1.0	2.5	2.0	4.0	2.0	3.0	110	170	150	230
1.0	2.5	2.0	4.0	2.0	3.0	110	170	150	230
2.5	4.0	2.5	4.5	2.5	4.0	130	190	170	255
2.0	4.0	2.5	4.5	2.0	4.0	130	190	170	255
2.0	4.0	2.5	4.5	2.0	4.0	130	190	170	255
2.0	3.5	2.5	4.0	2.0	3.5	110	170	150	230
						130	190		
						130	190		
						110	170		
	4.0		4.0		4.0	120	170	160	230
	4.0		4.0		4.0	120	170	160	230
						120	170		
						120	170		
2.0	4.5	2.5	4.0	2.5	4.5	130	190	170	255
2.5	4.0			2.0	3.5	110	160	140	200
2.0	4.0			2.5	3.5	110	170	160	200
						40	100		
						40	100		
2.5	3.5			2.0	3.0	60	120		
						40	100		
1.5	3.0	2.0	3.0	1.5	3.0	70	170	150	230
1.5	3.0			1.5	3.0	100	140	120	170
1.5	3.0	1.5	3.0	1.5	3.0	100	140	120	170
						70	120		
						70	120		
	2.0		3.0		2.5	80	120	110	170

TABLE 2.—*Estimated average acre yields of principal*

Soil	Silage corn		Apples		Potatoes	
	A	B	A	B	A	B
	Tons	*Tons*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Windsor loamy sand, 8 to 15 percent slopes		12				
Windsor loamy sand, 15 to 30 percent slopes						
Woodbridge fine sandy loam, 0 to 8 percent slopes	16	24	350	500	350	450
Woodbridge fine sandy loam, 8 to 15 percent slopes	14	22	350	500	300	400
Woodbridge very stony fine sandy loam, 0 to 8 percent slopes				500		
Woodbridge very stony fine sandy loam, 8 to 15 percent slopes			350	500		

[1] Cow-acre-days is the term used to express the number of days that 1 animal unit can graze 1 acre without injury to the pasture. An animal unit.

TABLE 3.—*Woodland groups and factors*

[Not included in any of the groups are the mapping units Bo, Ck, Sp, Tm, and Wg, which do not produce

Woodland group	Site quality and site index		
	White pine	Spruce and fir	Northern hardwoods
Group 3o1: Deep, well drained and moderately well drained, nearly level to moderately sloping, medium-textured and moderately coarse textured, nonstony and stony soils that have a high available water capacity. BgB, EmB, HfB, PbB, PbC, PfB, PfC, PkB, PkC, PlB, PlC, Py, WrB, WrC, WsB, WsC.	Excellent; site index 70–80.	Excellent; site index 60–70.	Excellent; site index 59–66.
Group 3r1: Deep, well drained and moderately well drained, moderately sloping, medium-textured, eroded soils that have a high available water capacity. BgC2, HfC2.	Excellent; site index 70–80.	Excellent; site index 60–70.	Excellent; site index 59–66.
Group 3r2: Deep, well-drained, strongly sloping, medium-textured, eroded soils that have a high available water capacity. HfD2.	Excellent; site index 70–80.	Excellent; site index 60–70.	Excellent; site index 59–66.
Group 3r3: Deep, well-drained, strongly sloping, moderately coarse textured, nonstony and stony soils that have a high available water capacity. PbD, PfD.	Excellent; site index 70–80.	Excellent; site index 60–70.	Excellent; site index 59–66.
Group 4o1: Deep, well-drained to somewhat poorly drained, nearly level to moderately sloping, medium-textured to coarse-textured soils that have high to low available water capacity. BuB, DeA, DeB, MeC, On.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4w1: Deep, poorly drained to somewhat poorly drained, nearly level, medium-textured to coarse-textured soils that have a high water table and are excessively wet during much of the year. Au, Ls, RbA, RgA, Ru, Sd, Wa.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4d1: Shallow, somewhat excessively drained, gently sloping to moderately sloping, moderately coarse textured soils that have a low available water capacity. CaB, CaC, LyB, LyC.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.

crops under two levels of management—Continued

Hay						Pasture			
Tall grass		Alfalfa-grass		Clover-grass		Permanent bluegrass		Tall grass and legume	
A	B	A	B	A	B	A	B	A	B
Tons	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]
			2. 5		2. 0	60	110	90	145
						60	120		
	4. 0		4. 0		4. 0	120	160	150	230
	4. 0		4. 0		4. 0	120	160	150	230
						90	121		
						90	114		

[1] animal unit is 1 cow, 1 steer, 1 horse, 5 hogs, or 7 sheep. Estimates are based on consumption of 35 pounds of dry matter a day by each

affecting woodland management

trees of commercial value, and the mapping units Cu, Gp, and Md, which need onsite investigation]

Trees preferred—		Factors affecting management—					
In existing stands	For planting	Erosion hazard	Equipment limitations	Seedling mortality	Plant competition for—		Windthrow hazard
					Hardwoods	Conifers	
White pine, white spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, white spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Moderate	Slight	Slight	Slight	Moderate	Slight.
White pine, white spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Severe	Moderate	Slight	Slight	Moderate	Slight.
White pine, red pine, northern hardwoods, upland oaks.	White pine, red pine, larches, northern spruce.	Slight	Moderate	Slight	Slight	Moderate	Slight.
White pine, upland oak, northern hardwoods, red pine, hemlock.	White pine, red pine, white spruce, larches.	Slight	Slight to moderate.	Slight	Slight	Moderate	Slight.
White pine, red spruce, red maple, hemlock, white ash, white birch.	White pine, white spruce.	Slight	Severe	Severe	Moderate	Moderate	Severe.
Balsam fir, white spruce, northern hardwoods, red spruce.	White spruce, white pine.	Slight	Slight	Severe	Slight	Slight	Moderate.

TABLE 3.—*Woodland groups and factors*

Woodland group	Site quality and site index		
	White pine	Spruce and fir	Northern hardwoods
Group 4x1: Shallow, somewhat excessively drained, gently sloping to strongly sloping, moderately coarse textured, very rocky soils that have a low available water capacity. CeB, CeC, LzB, LzC.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4x2: Shallow, somewhat excessively drained, strongly sloping to very steep, moderately coarse textured, very rocky soils that have a low available water capacity. CeE, LzE.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4x3: Deep, well-drained to somewhat excessively drained, moderately sloping to strongly sloping, moderately coarse textured, extremely stony soils that have low available water capacity. HkC.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4x4: Deep, well-drained to somewhat excessively drained, strongly sloping to very steep, moderately coarse textured, extremely stony soils that have a low available water capacity. HkE.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4s1: Deep, well-drained to somewhat excessively drained, gently sloping to moderately sloping, moderately coarse textured, nonstony and very stony soils that have a low available water capacity. HgB, HgC, HhB, HhC, MkB, MkC.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 4s2: Deep, well-drained to somewhat excessively drained, strongly sloping to steep, moderately coarse textured, nonstony and very stony soils that have a low available water capacity. HgD, HhD.	Good; site index 60–70.	Good; site index 50–60.	Good; site index 52–59.
Group 5s1: Deep, excessively drained, nearly level to moderately sloping, moderately coarse textured and coarse textured soils that have a low available water capacity. HlB, HlC, HnB, HnC, WmB, WmC.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5s2: Deep, excessively drained, strongly sloping to steep, moderately coarse textured and coarse textured soils that have a low available water capacity. HlD, HnD, WmD.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5c1: Deep, well-drained to somewhat poorly drained, moderately sloping, medium-textured, eroded soils that have a fine-textured subsoil and a high available water capacity. BuC2, SuC2.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5c2: Deep, well-drained, strongly sloping to steep, medium-textured, eroded soils that have a fine-textured subsoil and a high available water capacity. SuD2, SuE2.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5d1: Shallow, somewhat excessively drained, gently sloping to moderately sloping, moderately coarse textured soils that have a low available water capacity. HrB, HrC.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5d2: Shallow, somewhat excessively drained, strongly sloping, moderately coarse textured soils that have a low available water capacity. HrD.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5x1: Shallow, somewhat excessively drained, gently sloping to strongly sloping, moderately coarse textured, very rocky soils that have a low available water capacity. HsB, HsC.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.

affecting woodland management—Continued

Trees preferred—		Factors affecting management—					
In existing stands	For planting	Erosion hazard	Equipment limitations	Seedling mortality	Plant competition for—		Windthrow hazard
					Hardwoods	Conifers	
Balsam fir, white spruce, red spruce, northern hardwoods.	White spruce, white pine.	Slight	Moderate	Severe	Slight	Slight	Moderate.
Balsam fir, white spruce, red spruce, northern hardwoods.	White spruce, white pine.	Moderate	Severe	Severe	Slight	Slight	Moderate.
White pine, red pine, red spruce, northern hardwoods.	White pine, red pine, larches.	Slight	Moderate	Slight	Slight	Slight	Slight.
White pine, red pine, red spruce, northern hardwoods.	White pine, red pine, larches.	Moderate	Severe	Slight	Slight	Slight	Slight.
White pine, red pine, red spruce, northern hardwoods.	White pine, red pine, larches.	Slight	Slight	Moderate	Slight	Slight	Slight.
White pine, red pine, red spruce, northern hardwoods.	White pine, red pine, larches.	Slight	Moderate	Moderate	Slight	Slight	Slight.
White pine, red pine, northern hardwoods.	White pine, red pine, larches.	Slight	Slight	Severe	Slight	Slight	Slight.
White pine, red pine, northern hardwoods.	White pine, red pine, larches.	Slight	Moderate	Severe	Slight	Slight	Slight.
White pine, white spruce, northern hardwoods.	White pine, white spruce, Norway spruce.	Moderate	Moderate	Moderate	Slight	Slight to moderate.	Moderate.
White pine, white spruce, northern hardwoods.	White pine, white spruce, Norway spruce.	Severe	Severe	Moderate	Slight	Slight	Moderate.
White pine, red spruce	White pine, white spruce.	Slight	Slight	Severe	Slight	Slight	Moderate.
White pine, red spruce	White pine, white spruce.	Slight	Moderate	Severe	Slight	Slight	Moderate.
White pine, red spruce	White pine, white spruce.	Slight	Moderate	Severe	Slight	Slight	Moderate.

TABLE 3.—*Woodland groups and factors*

Woodland group	Site quality and site index		
	White pine	Spruce and fir	Northern hardwoods
Group 5x2: Shallow, somewhat excessively drained, strongly sloping to steep, moderately coarse textured, very rocky soils that have a low available water capacity. HsE.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 5w1: Deep, somewhat poorly drained to very poorly drained, nearly level, medium-textured and moderately coarse textured soils that have a high water table and are excessively wet during much of the year. Sn, So, Sz, Wh.	Fair; site index 50–60.	Fair; site index 40–50.	Fair; site index 45–52.
Group 6x1: Very shallow soil materials that have a very low available water capacity and Rock land. Ro.	Poor; site index 40–50.	Poor; site index 40.	Poor; site index 38–45.
Group 6s1: Deep, excessively drained sand that has a very low available water capacity. Du.	Poor; site index 40–50.	Poor; site index 40.	Poor; site index 38–45.

Woodland groups

The soils of Cumberland County have been placed in 24 woodland groups, according to characteristics that affect the growth of trees and the management of woodland stands. Each group is made up of soils that are similar in potential productivity for trees, that have about the same suitability for trees, and that require about the same management. Because trees suitable for commercial use do not grow on Biddeford silt loam (Bo), Coastal beaches (Ck), Sebago mucky peat (Sp), Tidal marsh (Tm), and Whately fine sandy loam (Wg), they have not been placed in woodland groups. Cut and fill land (Cu), Gravel pits (Gp), and Made land (Md) are not in a woodland group. They need onsite investigation.

In table 3 the woodland groups are described briefly and information relating to management of woodland is given. The woodland group classification of each soil is listed in the "Guide to Mapping Units" at the back of this survey and at the end of each soil description in the section "Description of the Soils."

The symbol for each woodland suitability group indicates productivity class, subclass, and group. For example, a woodland group has the symbol 3o1. The first number in this symbol indicates the woodland productivity class. There are six classes. Soils in class 1 have the highest potential productivity, and those in class 6, the lowest. Maine, however, is too far north to have soils that qualify for classes 1 or 2. In consequence, a soil in class 3 is considered to have *excellent* site quality in Maine, and those in classes 4, 5, and 6, to have *good*, *fair*, and *poor* quality, respectively. The soils are placed in productivity classes on the basis of site indexes. For those soils on which site indexes were not available, the productivity class was estimated on basis of data obtained for benchmark soils throughout the New England States.

The second part of the symbol identifying a woodland group is a small letter, which indicates the subclass. The letter *o* shows that the soils have few limitations that restrict their use for trees. Any other letter indicates an important soil property that imposes a moderate or severe hazard or limitation that affects managing woodland soils. The letter *c* indicates that the main limitation is the kind or amount of clay in the upper part of the soils in the group; *d* that rooting depth is restricted because the soils are shallow to a hardpan, to hard rock, or to some other restrictive material; *r* that the main limitation is steep slopes; *s* that the soils are sandy, dry, and unstable, have little or no difference in texture between the surface layer and subsoil, have low available moisture capacity, and generally have a low supply of plant nutrients; *w* that water in or on the soil either seasonally or year round, is the chief limitation; and *x* that stones or rocks in and on the soils are the chief limiting factor.

The last part of the symbol, another number, differentiates one woodland suitability group from others that have identical first and second parts in their identifying symbol. Examples are 3r1, 3r2, and 3r3.

For each woodland group listed in table 3, the estimated site index and site quality are given for white pine, spruce and fir, and northern hardwoods. Also shown are the trees generally preferred in the management of existing stands and for planting. Hazards and limitations that affect management are rated in this table. The terms used in this table are explained in the following paragraphs.

A site index for a given soil is the height, in feet, that a tree growing on that soil will reach in 50 years. The site indexes for the woodland groups were estimated and are given as a range in table 3, for example, 70–80. For white pine, the site indexes were based on data collected in Maine and New Hampshire by the Maine Forest Service, the New Hampshire Extension Service, and the Soil Conservation Service; those for white spruce and balsam fir were calculated by using data obtained in Maine, New Hampshire, and Vermont by the Maine Forest Service, the Vermont Forest Service, and the New Hampshire

affecting woodland management—Continued

Trees preferred—		Factors affecting management—					
In existing stands	For planting	Erosion hazard	Equipment limitations	Seedling mortality	Plant competition for—		Windthrow hazard
					Hardwoods	Conifers	
White pine, red spruce	White pine, white spruce.	Moderate	Severe	Severe	Slight	Slight	Moderate.
White pine, hemlock, balsam fir, white ash.	White spruce, white-cedar, white pine.	Slight	Severe	Severe	Severe	Severe	Severe.
Red spruce		Slight	Severe	Severe	Slight	Slight	Severe.
White pine	White pine, red pine	Slight	Slight	Severe	Slight	Slight	Severe.

Extension Service; and for northern hardwoods, the site indexes were based on studies made in Vermont by the Vermont Forest Service and the Soil Conservation Service.

The trees that are preferred in managing the existing stands and trees preferred for planting are not listed in order of preference in table 3. Other species that are not listed may be suited to the soils in the woodland groups. The trees listed as preferred for planting in a woodland group are suited to those soils and have been successfully planted on them. These trees are suitable for wood crops.

Hazards and limitations that affect management also affect the soils of each woodland group to varying degrees. These limitations and hazards are rated slight, moderate, or severe as explained in the following paragraphs.

Erosion hazard refers to the soil erosion that occurs during or following cutting operations if the soil is exposed along roads, skid trails, fire lanes, log decking areas, or other areas of operation. The hazard is *slight* if little or no loss of soil is expected. It is *moderate* if a moderate loss of soil is expected and some management is needed to reduce the risk of erosion. The erosion hazard is *severe* if logging operations are restricted and intensive and expensive management is needed to reduce soil losses.

Equipment limitations are rated on the basis of soil characteristics and topographic features that restrict or prohibit the use of equipment needed in harvesting trees. The limitation is *slight* if there is little or no restriction on the type of equipment that can be used. The limitation is *moderate* if the use of equipment is moderately restricted by soil properties and topographic features. The limitation is *severe* if the slope, rocks, wetness, or unstable soil material cause logging operations to be hazardous or expensive.

Seedling mortality refers to the expected loss of naturally occuring seedlings or planted seedlings. It is affected by the kind of soil, the degree of erosion, and other factors that affect seedling survival. Mortality is *slight* if the loss of seedlings is less than 25 percent; *moderate* if between 25 and 50 percent; and *severe* if more than 50 percent.

Plant competition refers to the degree that undesirable plants are likely to invade or compete with desirable trees when openings are made in the tree canopy. Competition is *slight* if it does not prevent adequate natural regeneration of desirable trees. Competition is *moderate* if competing plants delay, but do not prevent, the establishment of a desirable stand by natural regeneration or from planted seedlings. Competition is *severe* where natural or artificial regeneration is not adequate unless there is intensive site preparation and maintenance, including weeding.

Windthrow hazard is determined by soil characteristics that affect the normal development of tree roots and the firmness that roots anchor the trees so that they resist the force of the wind. A rating of *slight* indicates that trees are not expected to be blown down in commonly occurring winds. A rating of *moderate* indicates that root development is adequate to hold trees firmly except when the soil is excessively wet and the wind is strong. A rating of *severe* indicates that tree roots do not penetrate deep enough to give stability.

Use of the Soils for Wildlife Habitat [4]

Cumberland County has a large population of fish and wildlife. Deer are common, as are snowshoe hare, grouse, and other small game. Waterfowl are abundant, especially during migration. Geese and ducks winter in the tidal rivers and coastal bays. Furbearing animals, such as beaver, muskrat, and mink, are common. The coastal area is especially attractive to shore birds.

Most of the lakes and ponds support warm-water fish.

[4] Prepared by DAVID N. ALLAN, field biologist, Soil Conservation Service.

Salmonoid species are found in the streams and lakes, and Sebago Lake is famous for its landlocked salmon. Alewives, striped bass, smelts, and eels are taken in the tidal rivers. The tidal marshes are important and irreplaceable in the production of shellfish, marine fishes, and waterfowl. The coastal area produces abundant shellfish.

The soils in Cumberland County have been placed in 14 wildlife groups. Cut and fill land and Made land have not been placed in a group because they are highly variable in characteristics, and onsite investigation is needed to determine their suitability. The soils in each group are similar in their suitability and have about the same limitations for elements of wildlife habitat and for kinds of wildlife. Management is also similar within each group. The soils in each wildlife group are listed by map symbol in table 4. The wildlife group assigned to any soil is listed in the "Guide to Mapping Units" at the back of this survey, and also at the end of each soil description in the section "Descriptions of the Soils."

The survival and increase of most kinds of wildlife depend mainly on the adequate distribution of water and plants that provide food and cover. If water or these plants are lacking or inadequate, desired wildlife will be absent or scarce.

The kinds of soil in an area affect the vegetation that often determines the kind and amount of wildlife living in the area. The soils and the plants growing on them affect the quality and quantity of water needed by wildlife. Most wildlife habitat is created or improved by planting suitable vegetation, managing existing vegetation so as to increase or improve desirable plants, or by a combination of these measures. For this management, a knowledge of the soils is needed.

The interpretations given in this subsection are only guides for planning the use of the soils in mapping units shown on the soil map at the back of this survey. Onsite investigations are needed before developing specific areas for wildlife. Important soil features for designing, constructing, and maintaining ponds and other elements of wildlife habitat are given in the subsection "Engineering Uses of the Soils."

Elements of habitat and kinds of wildlife

Table 4 shows the suitability of most of the soils in this survey area for eight elements of wildlife habitat and for three broad classes of wildlife.

The information given in table 4 is useful in broad planning for wildlife habitat in parks, in public and private refuges, in areas used for nature study, and in areas developed for recreation; selecting soils that are most suitable as sites for creating, improving, or maintaining a specific kind of wildlife habitat; determining the intensity of management needed for a specific habitat element; eliminating sites that are difficult or are not feasible to manage as wildlife habitat; and determining areas that are suitable for preserving or for acquiring and developing a wildlife habitat.

The numerical ratings used in table 4 are 1 for well suited, 2 for suited, 3 for poorly suited, and 4 for unsuited.

A rating of *well suited* indicates that the soil has few or no limitations for use as a wildlife habitat. Generally, the rating indicates that little management is needed for the creation, improvement, or maintenance of a specific habitat element. A rating of *suited* indicates that the habitat element can be created, improved, or maintained, but that moderately intensive measures are needed to overcome the limitations. *Poorly suited* indicates that the habitat element can be created, improved, or maintained if difficult and expensive measures are used. A rating of *unsuited* indicates that it is impractical, if not impossible, to manage the soils for the habitat element. Not considered in the ratings given in table 4 are the present land use, the present vegetation, the location of a soil in relation to other soils, and the mobility of wildlife.

In table 4 the soils of Cumberland County are rated for eight elements of wildlife habitat and for three kinds of wildlife. The column readings in this table are explained in the following paragraphs.

"Grain and seed crops" consist of domestic grains or seed-producing annuals that are planted to produce food for wildlife. Examples are corn, rye, wheat, oats, millet, buckwheat, and sunflower.

"Grasses and legumes" refers to domestic perennial grasses and herbaceous legumes that are planted to furnish food and cover for wildlife. The grasses include fescue, bromegrass, bluegrass, timothy, redtop, orchardgrass, and reed canarygrass. The legumes include clover, trefoil, and alfalfa.

"Wild herbaceous upland plants" refers to native or introduced perennial grasses and forbs that provide food and cover, mainly for upland wildlife. These include bluestem, indiangrass, wheatgrass, quackgrass, wild ryegrass, oatgrass, bunchberry, pokeweed, strawberry, lespedeza, beggarweed, wild bean, nightshade, goldenrod, and dandelion.

"Hardwood woody plants" refers to nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, twigs (browse), or foliage. These plants are used extensively as food by wildlife and are commonly established through natural processes, but are also planted. They include oak, beech, cherry, hawthorn, dogwood, viburnum, maple, birch, and poplar. Smaller plants include grape, honeysuckle, blueberry, brier, autumnolive, and multiflora rose.

"Confierous woody plants" refers to cone-bearing trees and shrubs that are important to wildlife mainly as cover but that furnish food in the form of browse, seed, or fruitlike cones. These trees and shrubs are commonly established through natural processes, but they are also planted. Included are spruce, pine, white-cedar, eastern hemlock, balsam fir, juniper, and yew.

"Wetland food and cover plants" refers to annual and perennial wild herbaceous plants that grow on moist to wet sites. These plants furnish the food and cover used mainly by wetland wildlife. They include smartweed, wild millet, bulrush, spike-sedge, rushes, sedges, burreed, wildrice, rice cutgrass, mannagrass, and cattails. Submerged or floating aquatics are not included.

"Shallow impoundments" refers to areas that have been made by impounding water, by excavating, or by using devices to control water. In table 4 the soils are rated on the basis of impoundments that are generally not more than 6 feet deep. They include low dikes and levees, shallow dugouts, level ditches, and devices that control the water level in marshy drainageways or channels.

TABLE 4.—*Suitability of soils for elements of wildlife habitat and for kinds of wildlife*

[1=well suited; 2=suited; 3=poorly suited; and 4=unsuited. Cut and fill land (Cu) and Made land (Md) need onsite determination]

Wildlife group and map symbols	Elements of wildlife habitat								Kinds of Wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow impoundments	Excavated ponds	Openland	Woodland	Wetland
Group 1 BgC2, BuC2, HfB, HfC2, HgB, HgC, MeC, MkB, MkC, On, PbB, PbC, PkC, SuC2, WrC.	2	1	1	1	3	4	4	4	1	1	4
Group 2 BgB, BuB, DeA, DeB, EmB, PkB, Py, WrB.	2	1	1	1	3	3	3	3	2	1	3
Group 3 Au, RbA, Sd, Sn, Sz, Wa.	3	2	2	1	2	1	1	1	2	1	1
Group 4 Bo, So, Wg, Wh.	4	3	3	1	1	1	1	1	3	1	1
Group 5 HlB, HlC, HnB, HnC, WmB, WmC.	3	3	3	3	1	4	4	4	3	3	4
Group 6 CaB, CaC, HrB, HrC, LyB, LyC.	2	2	2	2	2	4	4	4	2	2	4
Group 7 HhB, HhC, PfB, PfC.	4	3	1	1	3	4	4	4	3	2	4
Group 8 CeB, CeC, CeE, HhD, HkC, HkE, HlD, HnD, HrD, HsB, HsC, HsE, LzB, LzC, LzE, PfD, WmD.	4	3	3	3	1	4	4	4	4	3	4
Group 9 Ls, Ru.	3	2	2	1	2	2	2	4	2	1	2
Group 10 HfD2, HgD, PbD, SuD2, SuE2.	3	2	1	1	3	4	4	4	2	2	4
Group 11 RgA.	4	3	2	1	2	1	1	1	4	1	1
Group 12 PlB, PlC, WsB, WsC.	4	3	1	1	3	4	4	4	3	1	4
Group 13 Ck, Du, Gp, Ro.	4	3	3	4	4	4	4	4	4	4	4
Group 14 Sp, Tm.	4	4	4	4	4	3	4	4	4	4	4

"Excavated ponds" refers to dugout areas or combinations of dugout areas and low dikes that hold enough water of suitable quality and depth to support fish or wildlife. Such ponds should be built in nearly level areas, and they should have a surface area of at least one-fourth acre that averages 6 feet in depth over at least one-fourth of the acreage. Also required is a permanently high water table or another source of unpolluted water.

"Openland wildlife" includes birds and mammals that normally frequent cropland, pasture, meadow, lawns, and areas that are overgrown with grasses, forbs, and shrubs. Examples are pheasant, mourning dove, meadowlark, field sparrow, redwinged blackbird, red fox, and woodchuck. Other important openland wildlife are deer and grouse.

"Woodland wildlife" includes birds and mammals that normally frequent wooded areas. They obtain food and cover in areas of hardwood trees and shrubs, coniferous trees and shrubs, or a mixture of these plants. Examples are ruffed grouse, woodcock, thrush, vireo, scarlet tanager,

white-tailed deer, moose, bear, bobcat, fisher, raccoon, snowshoe hare, gray squirrel, and red squirrel.

"Wetland wildlife" includes birds and mammals that normally live in ponds, marshes, swamps, and other wet areas. Examples are black duck, woodcock, heron, shore bird, beaver, mink, otter, and muskrat. Also found are turtle and frog.

Each rating under "Kinds of Wildlife" in table 4 is based on the ratings listed for the habitat elements in the first part of the table. For openland wildlife the rating is based on the ratings shown for grain and seed crops, grasses and legumes, wild herbaceous upland plants, hardwood plants, and coniferous wildlife habitat. The rating for woodland wildlife is based on grasses and legumes, wild herbaceous upland plants, hardwood woody plants, and coniferous woody plants. The rating for wetland wildlife is based on the ratings shown for wetland food and cover plants, shallow impoundments, and excavated ponds.

Engineering Uses of the Soils [5]

This section is of special interest to engineers, planners, contractors, farmers, and others who use soil as structural material or as foundation material. Tables 5, 6, and 7 describe and interpret soil properties that affect the construction and maintenance of roads and airports, pipelines, building foundations, water-storage facilities, erosion-control structures, drainage systems, and sewage-disposal systems. Among the properties most significant in engineering are permeability, shear strength, density, shrink-swell potential, water-holding capacity, grain-size distribution, plasticity, and reaction.

The information given in this section can be used in—

1. Planning and designing agricultural drainage systems, farm ponds, irrigation systems, diversion terraces, and other structures for controlling water and conserving soil.
2. Selecting potential locations for highways, airports, pipelines, and underground cables.
3. Locating probable sources of sand, gravel, or rock suitable for use as construction material.
4. Selecting potential industrial, commercial, residential, and recreational areas.
5. Determining the suitability of sites for disposal of liquid waste from processing plants and effluent from septic tanks.

The data and interpretations reported in this section do not eliminate the need for investigation, sampling, and testing at the sites of specific engineering works, especially those involving heavy loads and excavations deeper than the depths of the layers described. Even in these situations, however, this section and the soil map are useful because they indicate the kinds of problems that may be expected and provide a basis for planning more detailed field investigations.

Some terms used by soil scientists may be unfamiliar to engineers, and some words have different meanings in soil science than they have in engineering. Among the terms that have special meanings in soil science are the following: gravel, sand, silt, clay, loam, surface soil, subsoil, and horizon. These and other special terms are defined in the Glossary at the back of this publication.

Engineering classification systems

Most highway engineers classify soil material according to the system used by the American Association of State Highway Officials (AASHO) (*1,8*). Some engineers prefer to use the Unified classification system (*8,15*) developed by the Corps of Engineers, U.S. Army, and revised and expanded in cooperation with the Bureau of Reclamation, U.S. Department of Interior.

In the AASHO system, soils are classified according to those properties that affect use in highway construction. In this system, a soil is placed in one of seven basic groups ranging from A–1 through A–7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A–1 are gravelly soils of high bearing strength, or they are the best soils for subgrade (foundation). At the other extreme, in group A–7 are clay soils that have low bearing strength when wet. The best soils for subgrade are therefore classified as A–1, the next best A–2, and so on to A–7, the poorest soil for subgrade. Where laboratory data are available to justify a further breakdown, the A–1, A–2, and A–7 groups are divided as follows: A–1–a, A–1–b, A–2–4, A–2–5, A–2–6, A–2–7, A–7–5, and A–7–6. Soil material near a classification boundary is given a symbol for both classes; for example, A–2 or A–4.

In the Unified system, soils are classified according to grain-size distribution, plasticity, liquid limit, and organic matter. There are 8 classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; 6 classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes, for example "ML–CL."

Engineering test data

Table 5 shows the results of engineering tests performed by the Maine Highway Commission on several important soils in Cumberland County. The table shows the specific location where samples were taken, the depth to which sampling was done, and the results of tests to determine particle-size distribution and other properties significant in soil engineering.

Maximum dry density is the maximum unit weight of the soil when it is compacted at the optimum moisture content by the prescribed method of compaction. The moisture content that gives the highest dry unit weight is called the *optimum moisture content* for the specific method of compaction.

Mechanical analysis shows the percentages, by weight, of soil particles that would pass sieves of specified sizes. Sand and other coarser materials do not pass through the No. 200 sieve. Silt and clay pass through the No. 200 sieve. Silt is that material larger than 0.002 millimeter in diameter that passes through the No. 200 sieve, and clay is that portion passing through the No. 200 sieve that is smaller than 0.002 millimeter in diameter. The clay fraction was determined by the hydrometer method, rather than the pipette method most soil scientists use in determining the clay in soil samples.

[5] GLENN W. GRUBB, state conservation engineer, Soil Conservation Service, assisted in the preparation of this section.

Liquid limit and plasticity index indicate the effect of water on the strength and consistency of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a solid to a plastic state. The moisture content at which this occurs is the plastic limit. If the moisture content is further increased, the material changes from a plastic to a liquid state. The moisture content at which this occurs is the liquid limit. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

Estimated engineering properties

Table 6 shows estimates of soil properties important to engineering. The estimates are based on field classifications and descriptions, physical and chemical tests of selected representative samples, test data from comparable soils in adjacent areas, and from detailed experience in working with the individual kind of soil.

Texture, as defined by USDA, is determined by the relative proportions of sand, silt, and clay in soil material that is less than 2.0 millimeters in diameter. "Sand," "silt," "clay," and some of the other terms used in the USDA textural classification are defined in the Glossary.

Permeability, as used in table 6, relates only to movement of water downward through undisturbed and uncompacted soil. It does not include lateral seepage. The estimates are based on structure and porosity of the soil. Plowpans, surface crusts, and other properties resulting from soil use are not considered.

Available water capacity (available moisture capacity) is the amount of capillary water in the soil available for plant growth after all free water has drained away. It is expressed as inches of water per inch of soil.

Reaction is the degree of acidity or alkalinity of a soil, expressed as a pH value. The pH value and relative terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is an indication of the volume change to be expected of the soil material with changes in moisture content. Shrinking and swelling of soils causes damage to building foundations, roads, and other structures. A high shrink-swell potential indicates hazards in maintenance of structures constructed in, on, or with such materials.

Interpretations of engineering properties

Table 7 contains selected information on detrimental or undesirable features, as well as important desirable features. This information is useful to engineers and others who plan to use soil material in construction of highways, farm facilities, buildings, and sewage disposal systems. For example, the Biddeford, Buxton, Scantic, and Suffield soils formed in marine and lacustrine sediment near the coast and inland waterways. They are generally poorly cohesive when wet, have low shear strength, high erodibility, and therefore require special considerations if used for engineering purposes. The ratings and other interpretations in this table are based on estimated engineering properties of the soils in table 6; on available test data, including those in table 5; and on field experience. While the information strictly applies only to soil depths indicated in table 6, it is reasonably reliable to depths of about 6 feet for most soils, and several more for some.

Topsoil is a term used to designate a fertile soil or soil material, ordinarily rich in organic matter, used as a topdressing for lawns, gardens, roadbanks, and the like The ratings indicate suitability for such use.

Sand and gravel ratings are based on the probability that delineated areas of the soil contain deposits of sand and gravel. The ratings do not indicate quality or size of the deposits.

Road fill is material used to build embankments. The ratings indicate performance of soil material moved from borrow areas for these purposes.

Factors used in determining the suitability of soils for the location of highways or roads are the kind of material and the drainage. When highway cuts are planned at locations where there is a perched water table, a survey should be made to determine the need for interceptor drains or under-drains. Seepage on the back slopes of cuts may cause slumping or sliding of the underlying material until a stable slope is reached.

Shallowness to bedrock, the presence of boulders, or highly plastic clays all influence the vertical alignment of highways. A high degree of erodibility in cut sections, high water table, and other features mentioned in the engineering tables are the principal soil factors that influence location and design of highways.

Soil factors influencing the construction of farm pond reservoir areas are the permeability of the material and the possibility of compacting the soil to increase its ability to hold water. Many of the soils in this survey area have an open or porous substratum that will not hold water. Some of the more serious problems encountered in using the soils for farm ponds are shown in this table.

Farm pond embankments serve as dams. The soil features of both subsoil and substratum are those important to the use of soils for constructing embankments.

The factors considered for farm drainage are those features and qualities of the soil which affect the installation and performance of surface and subsurface drainage practices.

The factors considered for suitability for irrigation are: water-holding capacity, depth of soil as related to root depth, slope, water intake rate, need for drainage, depth to water table, susceptibility to stream overflow, stoniness, hazard of water erosion, presence of fragipan or other layer limiting water movement, and topography.

Terraces and diversions are shallow, broad-based ditches designed for the interception and diversion of excess water from land areas. They are influenced by soil features that affect their adaptability to the location, their effectiveness, and ease of maintenance.

Grassed waterways are shallow vegetated channels designed for the safe removal of water, generally from terraces and diversions on moderately sloping to steep soils. They are strongly influenced by slope, erodibility, drainage class, stoniness, and texture.

Suitability for pipeline construction and maintenance depends on properties that limit the construction and maintenance of pipelines. Collectively these soil factors are depth to bedrock, stability of substratum, shear strength, stoniness or rockiness, steepness of slope, wetness, and corrosivity.

TABLE 5.—*Engineering*

[Tests performed by the Maine State Highway Commission in cooperation with the U.S. Department of Commerce, Bureau of Public indicates no determination was made

Soil name and location of sample	Parent material	Report No. S–64–Me–3–	Depth from surface	Moisture density data [1]	
				Maxium dry density	Optimum moisture
			Inches	*Lb. per cu. ft.*	*Percent*
Buxton silt loam: Town of Scarboro—Along Beech Ridge Road about 1 mile west of turnpike (Modal).	Marine deposits of silt and clay.	4–1 4–2	15–30 30–45	107 105	17 20
Hermon very stony sandy loam: Town of Sebago—South Bridgeton Road about 2 miles south of Folley Road, ½ mile north of State Rte. 114 (Modal).	Granitic glacial till	12–1 12–2	5–21 21–40	115 122	12 9
Ondawa fine sandy loam: Town of Falmouth—Along Presumpscot River near crossing of Blackstrap Road (Modal).	Alluvial material	7–1 7–2	8–32 32–60	106 101	15 19
Peru very stony fine sandy loam: Town of Sebago—Near Douglas Hill on west Baldwin Road (Modal).	Granitic glacial till	13–1 13–2	6–24 24–36	113 123	14 10
Saugatuck loamy sand: Town of Scarboro—Payne Road entrance to Scarboro Downs (Modal).	Sandy marine material	1–1 1–2	6–30 30–48	108 111	14 14
Woodbridge fine sandy loam: Town of Baldwin—3 miles east of West Baldwin and ¼ mile south of main road near Stone House (Modal).	Schistose glacial till	16–1 16–2	7–20 20–30	110 120	15 13

[1] Based on AASHO Designation: T 99–57 Method C (*1*).
[2] Mechanical analysis according to AASHO Designation T 88–57 (*1*). Results obtained by this procedure may differ somewhat from the results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method,

TABLE 6.—*Estimated engineering*

An asterisk in the first column indicates that at least one mapping unit is made up of two or more kinds of soils. The soils in such to other series as indicated. Onsite determination is needed for land types Ck, Cu, Du, Gp, Md, Ro, and

Soil series and map symbols	Depth to—		Depth from surface (typical profile)	Classification		
	Bedrock	Seasonal high water table		USDA texture	Unified	AASHO
	Feet	*Feet*	*Inches*			
Au Gres: Au	>5	0–1	0–32	Loamy sand	SM, SP–SM, SP.	A–2, A–3
			32–60	Sand	SP, SP–SM, SP.	A–2, A–3
Belgrade: BgB, BgC2	>5	1–2½	0–18	Very fine sandy loam	ML, ML–CL	A–4
			18–28	Silt loam	ML, ML–CL	A–4
			28–60	Very fine sandy loam	ML, ML–CL	A–4

See footnote at end of table.

test data

Roads (BPR), according to standard procedures of the American Association of State Highway Officials (AASHO) (*1*). Absence of an entry or information does not apply]

Fragments larger than 3 inches in diameter discarded in field sampling	Mechanical analysis [2] Percentage passing sieve— [3] 3 in.	1½ in.	¾ in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Percentage smaller than— 0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.	Liquid limit	Plasticity index	Classification AASHO	Unified
Percent															
					100	97	91	75	45	19	12	29	11	A-6	CL
					100	100	98	91	69	35	23	36	15	A-6	CL
40	100	98	93	83	75	48	19	14	6	1			[4] NP	A-1-b	SM
40	100	92	85	74	67	44	17	13	5	1			NP	A-1-b	SM
						100	34	26	9	1	1		NP	A-2-4	SM
					100	99	52	41	15	3	2	22	NP	A-4	ML
10	100	98	95	84	77	56	28	22	11	2	1	26	NP	A-2-4	SM
10	100	91	86	74	69	51	24	19	10	2	1		NP	A-2-4	SM
		100	98	91	85	37	5	2	1				NP	A-1-b	SP
			100	93	86	18	2	1	0.5				NP	A-1-b	SP
5	100	95	93	84	80	63	31	25	13	3	1	27	NP	A-2-4	SM
5	100	98	96	90	86	69	37	32	20	6	2	17	NP	A-4	SM

and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural classes for soils.

[3] Based on total material. Laboratory test data corrected for amount discarded in field.

[4] Nonplastic.

properties of the soils

mapping units may have different properties and limitations, and it is necessary to follow carefully the instructions for referring Tm, and Sebago mucky peat (Sp) is too organic for engineering use. <=less than, >=more than]

Coarse fraction (greater than 3 inches)	Percentage passing sieve— No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Permeability	Available water capacity	Reaction	Shrink-swell potential
Percent					*Inches per hour*	*Inches per inch of soil*	*pH*	
0	95–100	85–100	60– 95	0– 30	2.0 –6.3	0.01–0.15	5.1–6.5	Low.
0	95–100	85–100	60– 85	0– 15	>6.3	0.01–0.08	5.1–6.5	Low.
0	100	100	90–100	65– 90	0.63–2.0	0.17–0.30	5.1–6.0	Low.
0	100	100	90–100	65– 90	0.63–2.0	0.15–0.26	5.1–6.0	Low.
0	100	100	90–100	60– 90	0.20–2.0	0.15–0.26	5.1–6.0	Low.

TABLE 6.—*Estimated engineering*

Soil series and map symbols	Depth to—		Depth from surface (typical profile)	Classification		
	Bedrock	Seasonal high water table		USDA texture	Unified	AASHO
	Feet	*Feet*	*Inches*			
Biddeford: Bo	>5	0–1	0–4	Silt loam	ML, CL, OL, CH.	A–4, A–6, A–7
			4–33	Silty clay	CL, CH	A–7
			33–60	Silty clay loam	CL, CH	A–6, A–7
Buxton: BuB, BuC2	>5	1–2½	0–12	Silt loam	ML, CL	A–4, A–6, A–7
			12–60	Silty clay	MH, CL	A–6, A–7
Canaan: CaB, CaC, CeB, CeC, CeE	1–1½	(1)	0–12	Sandy loam	SM	A–2
			12–18	Gravelly sandy loam	SM	A–1, A–2
			18	Granite.		
Deerfield: DeA, DeB	>5	1–2½	0–15	Loamy sand	SM, SP–SM	A–2, A–3, A–4
			15–60	Sand	SP, SM, SP–SM	A–1, A–2, A–3
Elmwood: EmB	>5	1–2½	0–8	Fine sandy loam	SM	A–2, A–4
			8–25	Sandy loam	SM	A–2, A–4
			25–60	Silty clay loam	ML, CL	A–6
Hartland: HfB, HfC2, HfD2	>5	3–5	0–23	Silt loam	ML, ML–CL	A–4
			23–29	Very fine sandy loam	ML, ML–CL	A–4
			29–60	Loamy very fine sand and silt.	ML, ML–CL	A–4
Hermon: HgB, HgC, HgD, HhB, HhC, HhD, HkC, HkE.	>5	3–5	0–5	Sandy loam	SM	A–2, A–4
			5–15	Gravelly sandy loam	SM, GM	A–1, A–2
			15–60	Gravelly loamy sand	SM, GM, SP–SM, GP–GM	A–1, A–2
*Hinckley: HlB, HlC, HlD, HnB, HnC, HnD. For Suffield part of HnB, HnC, and HnD, see Suffield series.	>5	>5	0–10	Gravelly sandy loam	SM, ML	A–1, A–2, A–4
			10–19	Gravelly loamy sand	SM, GM, GP–GM	A–1, A–2
			19–60	Very gravelly sand	GP–GM, GP, SP, SP–SM	A–1
Hollis: HrB, HrC, HrD, HsB, HsC, HsE.	1–1½	(1)	0–8	Fine sandy loam	SM, ML	A–2, A–4
			8–18	Fine sandy loam	SM, ML	A–2, A–4
			18	Schist bedrock.		
*Limerick: Ls. For Saco part, see Saco series.	>5	0–1	0–21	Silt loam	ML, OL, OH	A–4
			21–60	Silt loam	ML	A–4
Lyman: LyB, LyC, LzB, LzC, LzE	1–1½	(1)	0–8	Fine sandy loam	SM, ML	A–2, A–4
			8–16	Sandy loam	SM, ML, ML–CL	A–2, A–4
			16	Schist bedrock.		
Melrose: MeC	>5	>5	0–23	Fine sandy loam	SM, ML	A–2, A–4
			23–60	Silty clay	MH, CL	A–7
Merrimac: MkB, MkC	>5	>5	0–16	Fine sandy loam	SM, ML	A–2, A–4
			16–24	Gravelly sandy loam	SM	A–1, A–2
			24–60	Very gravelly sand	SP, GP	A–1
Ondawa: On	>5	>3	0–9	Fine sandy loam	SM, ML	A–2, A–4
			9–30	Fine sandy loam	SM, ML	A–2, A–4
			30–60	Loamy fine sand, sand	SM, ML	A–2, A–4
Paxton: PbB, PbC, PbD, PfB, PfC, PfD.	>5	>3	0–20	Fine sandy loam	SM, ML, SM–SC	A–2, A–4
			20–60	Fine sandy loam (fragipan).	SM, ML, SM–SC	A–2, A–4

See footnote at end of table.

properties of the soils—Continued

Coarse fraction (greater than 3 inches)	Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
Percent					*Inches per hour*	*Inches per inch of soil*	*pH*	
0	100	100	100	80–100	0. 20–0. 63	0. 12–0. 30	5. 6–6. 5	Low or moderate.
0	100	100	100	95–100	<0. 20	0. 09–0. 17	5. 6–7. 8	Low or moderate.
0	100	100	100	85–100	<0. 20	0. 09–0. 18	6. 6–7. 8	Low or moderate.
0	100	100	95–100	80– 90	0. 20–2. 0	0. 18–0. 25	5. 0–6. 5	Low or moderate.
0	100	100	95–100	80–100	0. 06–0. 63	0. 13–0. 25	5. 1–6. 5	Low or moderate.
5–10	75–90	70–80	65–75	15–35	2. 0–6. 3	0. 10–0. 12	4. 5–5. 5	Low.
0–15	65–95	55–90	40–70	15–35	2. 0–6. 3	0. 14–0. 18	4. 5–6. 0	Low.
0	95–100	80–100	65–90	5–45	2. 0–6. 3	0. 07–0. 25	5. 1–5. 5	Low.
0	95–100	80–100	40–95	0–30	>6. 3	0. 01–0. 13	5. 1–6. 0	Low.
0	100	95–100	90–100	35–45	0. 63–6. 3	0. 11–0. 25	5. 1–6. 5	Low.
0	100	95–100	90–100	25–35	2. 0–6. 3	0. 09–0. 18	5. 1–6. 5	Low.
0	100	100	95–100	85–100	<0. 20	0. 10–0. 18	6. 1–7. 3	Low or moderate.
0	100	100	95–100	70–95	0. 63–2. 0	0. 12–0. 30	5. 1–6. 0	Low.
0	100	100	95–100	65–90	0. 63–2. 0	0. 10–0. 26	5. 1–6. 0	Low.
0	100	100	95–100	65–90	0. 02–6. 3	0. 10–0. 26	5. 6–7. 3	Low.
0–20	70–95	65–85	50–75	20–40	>6. 3	0. 05–0. 20	4. 5–5. 5	Low.
0–20	50–80	40–70	25–60	15–30	>6. 3	0. 02–0. 14	4. 5–5. 5	Low.
5–30	45–80	40–70	15–50	0–30	>6. 3	0. 01–0. 10	4. 5–5. 5	Low.
0–35	70–95	60–90	30–85	15–55	>6. 3	0. 03–0. 23	4. 0–6. 5	Low.
0–35	60–90	50–80	25–75	10–30	>6. 3	0. 01–0. 11	4. 0–6. 5	Low.
10–40	30–70	20–60	10–50	0–10	>6. 3	0. 01–0. 06	4. 0–6. 5	Low.
0–15	85–95	80–95	65–80	30–65	2. 0–6. 3	0. 10–0. 24	4. 5–5. 5	Low.
0–15	75–90	65–80	50–65	20–55	2. 0–6. 3	0. 06–0. 18	4. 5–5. 5	Low.
0	100	95–100	90–100	75–95	0. 63–2. 0	0. 16–0. 30	5. 6–7. 3	Low.
0	100	95–100	80–95	55–95	0. 63–2. 0	0. 14–0. 26	5. 6–7. 3	Low.
0–20	65–95	60–90	50–75	30–55	0. 63–6. 3	0. 14–0. 23	4. 5–5. 5	Low.
0–20	65–95	55–90	45–85	25–70	0. 63–6. 3	0. 05–0. 23	4. 5–6. 0	Low.
0	100	95–100	70–100	25–70	0. 63–6. 3	0. 08–0. 18	5. 1–6. 0	Low.
0	100	100	95–100	85–100	<0. 20	0. 11–0. 18	5. 1–7. 3	Low or moderate.
0–5	80–100	75–95	60–95	30–65	2. 0–6. 3	0. 07–0. 20	4. 5–6. 0	Low.
0–5	65–95	60–90	40–85	20–35	2. 0–6. 3	0. 03–0. 15	4. 5–6. 0	Low.
10–40	40–65	25–60	5–45	0–10	>6. 3	0. 01–0. 06	4. 5–6. 0	Low.
0	100	95–100	80–100	30–80	2. 0–6. 3	0. 11–0. 30	5. 1–6. 0	Low.
0	100	95–100	80–90	20–60	2. 0–6. 3	0. 09–0. 18	5. 1–6. 0	Low.
0	85–100	80–100	70–85	10–60	2. 0–6. 3	0. 01–0. 13	5. 1–6. 0	Low.
0–20	70–95	65–90	55–85	25–65	0. 63–2. 0	0. 06–0. 25	5. 1–6. 0	Low.
5–15	70–90	60–85	55–75	15–60	<0. 63	0. 08–0. 12	5. 1–6. 0	Low.

TABLE 6.—*Estimated engineering*

Soil series and map symbols	Depth to—		Depth from surface (typical profile)	Classification		
	Bedrock	Seasonal high water table		USDA texture	Unified	AASHO
	Feet	*Feet*	*Inches*			
Peru: PkB, PkC, PlB, PlC	>5	1–2½	0–18	Fine sandy loam	SM, ML	A–2, A–4
			18–60	Fine sandy loam (fragipan).	SM, ML	A–2, A–4
Podunk: Py	>5	1–2½	0–26	Fine sandy loam	SM, ML	A–2, A–4
			26–60	Loamy fine sand	SM, SP–SM, SP	A–2, A–3
Ridgebury: RbA, RgA	>5	0–1	0–18	Fine sandy loam	SM, ML	A–2, A–4
			18–60	Fine sandy loam (fragipan).	SM, ML	A–2, A–4
Rumney: Ru	>5	0–1	0–30	Fine sandy loam	SM, ML	A–2, A–4
			30–60	Loamy sand	SM, SP–SM, SP	A–1, A–2, A–3
*Saco Mapped only in a complex with a Limerick soil.	>5	0–1	0–24	Silt loam	ML, ON, OL	A–4
			24–60	Silt loam	ML	A–4
Saugatuck: Sd	>5	0–1	0–6	Loamy sand	SP, SM, SP–SM	A–1, A–2, A–3
			6–30	Sand (cemented)	SP, SP–SM, SM	A–1, A–2, A–3
			30–60	Sand	SP, SP–SM	A–1, A–3
Scantic: Sn	>5	0–1	0–13	Silt loam	ML, CL, OL, OH, MH	A–4, A–6, A–7
			13–28	Silty clay loam	CL, MH	A–7
			28–60	Clay	CL, MH	A–7
Scarboro: So	>5	0–1	0–5	Sandy loam	SM, OL	A–2, A–4
			5–60	Sand	SP, SM	A–1, A–2, A–3
Suffield: SuC2, SuD2, SuE2	>5	4–5	0–23	Silt loam	ML	A–4, A–6
			23–60	Silty clay	ML, CL	A–6, A–7
Swanton: Sz	>5	0–1	0–32	Fine sandy loam	SM, ML	A–4
			32–60	Silty clay	CL	A–6, A–7
Walpole: Wa	>5	0–1	0–20	Fine sandy loam	SM	A–2, A–4
			20–60	Gravelly loamy sand	SM, SP, GP, GM	A–1, A–2, A–3
Whately: Wg	>5	0–1	0–19	Fine sandy loam, sandy loam.	SM, ML	A–2, A–4
			19–26	Silty clay loam	ML, CL	A–6, A–7
			26–60	Silty clay, clay	CL, CH	A–6, A–7
Whitman: Wh	>5	0–1	0–10	Fine sandy loam	SM, ML	A–2, A–4
			10–18	Sandy loam	SM, ML	A–2, A–4
			18–60	Gravelly sandy loam (fragipan).	SM, ML	A–1, A–2, A–4
Windsor: WmB, WmC, WmD	>5	4–5	0–6	Loamy sand	SM	A–2
			6–26	Loamy sand	SM, SP–SM, SP	A–2, A–3
			26–60	Sand	SM, SP, SP–SM	A–2, A–3
Woodbridge: WrB, WrC, WsB, WsC	>5	1–2½	0–20	Fine sandy loam	SM, ML	A–2, A–4
			20–60	Fine sandy loam	SM, ML	A–2, A–4

[1] There is no seasonal water table above the bedrock in these soils.

properties of the soils—Continued

Coarse fraction (greater than 3 inches)	Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
Percent					*Inches per hour*	*Inches per inch of soil*	*pH*	
0–10	75–95	70–95	50–85	15–65	0.63–2.0	0.13–0.18	4.5–6.0	Low.
5–15	70–95	65–95	55–85	20–65	<0.6	0.08–0.13	5.1–6.5	Low.
0	100	95–100	85–95	30–75	0.63–6.3	0.09–0.30	4.5–6.0	Low.
0	90–100	80–100	60–90	0–30	>6.3	0.01–0.13	4.5–6.0	Low.
0–15	65–100	55–95	40–85	20–65	0.63–2.0	0.04–0.24	4.5–5.5	Low.
5–15	65–95	55–90	35–80	20–60	<0.63	0.08–0.12	5.1–6.0	Low.
0	85–100	80–100	65–100	30–85	0.63–6.3	0.10–0.30	5.1–6.5	Low.
0	85–100	80–100	40–90	0–30	>6.3	0.01–0.13	5.1–6.5	Low.
0	100	95–100	95–100	75–95	0.63–2.0	0.15–0.30	4.5–6.0	Low.
0	100	95–100	95–100	75–95	0.63–2.0	0.15–0.26	4.5–6.0	Low.
0	95–100	90–100	75–95	0–35	>6.3	0.03–0.15	4.5–5.5	Low.
0	95–100	90–100	70–90	0–15	<0.20	0.02–0.08	4.5–5.5	Low.
0	95–100	90–100	70–90	0–10	>6.3	0.02–0.08	4.5–6.5	Low.
0	100	100	95–100	80–100	0.63–2.0	0.14–0.30	5.1–6.0	Low.
0	100	100	95–100	90–100	<0.20	0.11–0.18	5.1–6.0	Low or moderate.
0	100	100	95–100	90–100	<0.20	0.09–0.18	6.1–6.5	Low or moderate.
0	90–100	80–100	65–95	25–50	2.0–6.3	0.07–0.23	4.5–5.5	Low.
0	85–100	70–100	45–95	0–30	>6.3	0.01–0.13	4.5–5.5	Low.
0	95–100	95–100	90–100	70–90	0.63–2.0	0.14–0.30	5.1–6.5	Low.
0	100	100	95–100	80–100	0.20–0.63	0.16–0.18	5.6–7.3	Low or moderate.
0	100	95–100	85–95	40–70	0.63–6.3	0.09–0.25	5.1–6.0	Low.
0	100	100	100	80–100	<0.20	0.09–0.18	5.6–7.3	Low or moderate.
0–5	90–100	85–100	70–100	30–50	2.0–6.3	0.10–0.23	4.5–5.5	Low.
0–20	55–100	50–100	25–90	0–30	>6.3	0.01–0.13	4.5–5.5	Low.
0	100	100	85–100	30–80	0.63–6.3	0.10–0.25	5.6–6.5	Low.
0	100	100	95–100	80–90	0.20–0.63	0.13–0.18	6.1–7.3	Low or moderate.
0	100	100	100	90–100	<0.20	0.09–0.18	6.1–7.3	Low or moderate.
0–10	85–95	75–90	55–90	25–75	0.63–6.3	0.08–0.28	5.6–7.3	Low.
5–20	70–95	60–90	45–80	20–65	0.63–6.3	0.05–0.23	5.6–7.3	Low.
5–20	65–95	60–90	40–80	15–65	<0.63	0.08–0.12	5.6–7.3	Low.
0	95–100	90–100	75–95	20–30	>6.3	0.08–0.15	4.5–5.5	Low.
0	95–100	90–100	90–95	0–30	>6.3	0.02–0.12	4.5–5.5	Low.
0	90–100	85–100	65–90	0–20	>6.3	0.01–0.08	4.5–5.5	Low.
0–10	75–95	65–90	45–85	25–60	2.0–6.3	0.06–0.23	5.1–6.0	Low.
5–15	70–95	60–90	40–85	25–60	<0.63	0.08–0.12	5.1–6.0	Low.

TABLE 7.—*Interpretations of*

[An asterisk in the first column indicates that at least one mapping unit is made up of two or more kinds of soil. The soils in such mapping indicated. Onsite determination is needed for land types Ck, Cu, Du, Gp, Md,

Soils series and map symbols	Suitability as a source of—[1]			Soil features affecting—	
	Topsoil	Sand and gravel	Road fill	Highway and road location	Farm ponds: Reservoir area
Au Gres: Au	Fair: sandy	Fair to good for sand; poor for gravel; some fines.	Good: binder needed in places; high water table.	Cut slopes unstable; highly susceptible to frost heave; high water table.	Rapid permeability; high water table.
Belgrade: BgB, BgC2	Good	Poor: excess fines.	Fair: high in fines.	Seasonal water table; high susceptibility to frost heave; erosion hazard; piping.	Moderately slow to moderate permeability; seasonal high water table.
Biddeford: Bo	Poor: organic surface layer; clayey.	Poor: excess fines.	Poor: high in clay; high water table.	Highly susceptible to frost heave; low shear strength; excess water most of year.	High water table; very slow permeability.
Buxton: BuB, BuC2	Good: high clay content in places.	Poor: excess fines.	Poor: high in clay; seasonal water table.	Highly susceptible to frost heave; cut slopes are unstable; seasonal water table.	Seasonal water table; slow to very slow permeability.
Canaan: CaB, CaC, CeB, CeC, CeE.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Shallow to bedrock; seepage over top of bedrock.	Shallow to bedrock
Deerfield: DeA, DeB	Fair: coarse fragments.	Fair to poor for sand: some fines; poor for gravel.	Good: binder needed; seasonal water table.	Cut slopes are unstable; susceptible to frost heave; erodible; seasonal water table.	Seasonal water table; rapid permeability in substratum.
Elmwood: EmB	Fair: coarse fragments.	Poor: excess fines.	Poor: clay at a depth of 20 to 24 inches; seasonal water table.	Seasonal water table; cut slopes unstable in places; seepage spots in cuts.	Slow permeability in substratum.
Hartland: HfB, HfC2, HfD2.	Good	Poor: excess fines.	Fair: high in fines.	Erosion hazard; highly susceptible to frost heave.	Variable permeability; sand lenses; deep water tables.
Hermon: HgB, HgC, HgD, HhB, HhC, HhD, HkC, HkE.	Poor: coarse fragments.	Fair to poor: excess fines.	Good: stony soil material.	Cut slopes are unstable; stones and boulders; susceptible to frost heaving.	Rapid permeability; deep water table; stony and bouldery material.

See footnotes at end of table.

engineering properties

units may have different properties and limitations, and it is necessary to follow carefully the instructions for referring to other series as Ro, and Tm; and Sebago mucky peat (Sp) is too organic for engineering use]

Soil features affecting—Continued					
Farm ponds—Con. Embankment	Drainage	Sprinkler irrigation	Terraces and diversions	Grassed waterways	Pipeline (construction and maintenance)
Poor to good compaction; fair to poor stability; susceptible to piping; pervious.	High water table; unstable ditchbanks; rapid permeability.	High water table; adequate moisture generally is available.	High water table; rapid permeability.	High water table; rapid permeability.	Unstable trench walls; high water table.
Erosion hazard; fair to poor stability; susceptible to piping.	Seasonal water table; moderately slow to moderate permeability.	Slow intake rate; high available water capacity.	Hazard of erosion; seepage spots.	Hazard of erosion; seepage spots.	Erosion hazard; seasonal water table; unstable trench walls.
Fair stability; highly susceptible to frost heave; erosion hazard.	High water table; very slow permeability; available outlets are a problem.	High water table; excess moisture generally is available.	On lowest part of landscape, nearly level slopes; clay material.[2]	On lowest part of landscape, nearly level; clay soil material.[2]	High water table; low shear strength; unstable trench walls.
Erosion hazard; highly susceptible to frost heave; poor to good stability and compaction.	Seasonal water table; slow to very slow permeability.	High available water capacity; slow intake rate.	Hazard of erosion; seepage spots.	Hazard of erosion; seepage spots.	Seasonal water table; low shear strength; unstable trench walls.
Shallow to bedrock.	Somewhat excessively drained; shallow to bedrock.[2]	Low available water capacity; shallow to bedrock.	Shallow to bedrock.	Shallow to bedrock.	Shallow to bedrock.
Susceptible to piping; fair to poor stability; fair to good compaction; pervious.	Seasonal water table; moderately rapid permeability.	Moderate available water capacity; high intake rate.	Moderately rapid permeability; difficult to vegetate.	Moderately rapid permeability; difficult to vegetate.	Unstable trench walls; seasonal water table.
Fair to good stability and compaction in substratum.	Seasonal water table; slow permeability in substratum.	High available water capacity; rapid intake rate.	Seasonal water table; seepage spots; hazard of erosion; clay substratum.	Hazard of erosion; clay substratum; seepage spots.	Seasonal water table; low shear strength in substratum; unstable trench walls in substratum when wet.
Fair to poor stability; susceptible to piping; hazard of erosion.	Well drained[2]	High available water capacity; moderate intake rate.	Hazard of erosion; variable permeability.	Hazard of erosion; variable permeability.	Hazard of erosion; unstable trench walls.
Fair to poor stability; stones and boulders.	Well drained to somewhat excessively drained.[2]	Moderate available water capacity; rapid permeability; high intake rate.	Rapid permeability; stony and bouldery material.	Moderate available water capacity; rapid permeability; stony and bouldery soil material.	Stoney and bouldery soil material; unstable trench walls in places.

TABLE 7.—*Interpretations of*

Soils series and map symbols	Suitability as a source of—[1]			Soil features affecting—	
	Topsoil	Sand and gravel	Road fill	Highway and road location	Farm ponds: Reservoir area
*Hinckley: HlB, HlC, HlD, HnB, HnC, HnD. For Suffield part of HnB, HnC, and HnD, see Suffield series.	Poor: coarse fragments.	Good	Good	Slopes are difficult to vegetate; cut slopes are unstable; cobblestones dislodge easily in cut slopes.	Very rapid permeability in substratum.
Hollis: HrB, HrC, HrD, HsB, HsC, HsE.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Shallow to bedrock; seepage over top of bedrock.	Shallow to bedrock
*Limerick: Ls. For Saco component, see Saco series.	Good	Poor: excess fines.	Fair: high in fines; high water table may be limiting.	Subject to flooding; highly susceptible to frost heave; high water table.	Subject to flooding; high water table; moderate permeability.
Lyman: LyB, LyC, LzB, LzC, LzE.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Shallow to bedrock; seepage over top of bedrock.	Shallow to bedrock
Melrose: MeC	Fair: coarse fragments.	Poor: excess fines.	Poor: clay at a depth of 20 to 30 inches.	Clay substratum; seepage in cut slopes; hazard of erosion.	Permeability in substratum; deep water table.
Merrimac: MkB, MkC.	Fair: coarse fragments.	Good	Good	Cut slopes unstable; difficult to vegetate; substratum material in cut slopes.	Rapid permeability in substratum; deep water table.
Ondawa: On	Good	Poor: excess fines.	Fair: high in fines.	Subject to flooding	Subject to flooding; moderately rapid to rapid permeability; deep water table.
Paxton: PbB, PbC, PbD, PfB, PfC, PfD.	Poor: coarse fragments.	Poor: excess fines.	Fair to good: high in fines; stony soil material.	Seepage in cut slopes; stony soil material; film substratum; susceptible to frost heaving of stones on cut slopes and in road subgrades.	Moderately slow permeability in compact substratum; stony soil material; deep water table.
Peru: PkB, PkC, PlB, PlC.	Poor: coarse fragments.	Poor	Fair to good: high in fines; stony soil material; seasonal water table.	Seepage in cut slopes; highly susceptible to frost heave; seasonal water table; stony soil material.	Moderately slow permeability in compact substratum; seasonal water table.

See footnotes at end of table.

engineering properties—Continued

Soil features affecting—Continued					
Farm ponds—Con. Embankment	Drainage	Sprinkler irrigation	Terraces and diversions	Grassed waterways	Pipeline (construction and maintenance)
Pervious; fair stability; fair to good compaction.	Excessively drained [2]	Low available water capacity; high intake rate.	Sands and gravels; rapid permeability.	Low available water capacity; rapid permeability; sands and gravels difficult to vegetate; erosion hazard on steeper slopes.	Unstable trench walls.
Shallow to bedrock.	Somewhat excessively drained; shallow to bedrock.[2]	Shallow to bedrock; low available water capacity.	Shallow to bedrock.	Shallow to bedrock.	Shallow to bedrock.
Fair to poor stability and compaction; susceptible to piping; somewhat pervious.	High water table; available outlets are a problem.	High water table; excess moisture generally is available.[2]	Nearly level; subject to flooding.[2]	Nearly level; subject to flooding.[2]	Subject to flooding; unstable trench walls; high water table.
Shallow to bedrock.	Shallow to bedrock.[2]	Shallow to bedrock; moderate available water capacity.	Shallow to bedrock.	Shallow to bedrock.	Shallow to bedrock.
Poor to good stability and compaction.	Well drained [2]-------	High available water capacity; rapid intake rate.	Seepage spots; hazard of erosion; clay substratum.	Seepage spots; clay substratum; hazard of erosion.	Low shear strength in substratum; unstable trench walls in substratum if wet.
Pervious; poor to good stability; fair to good compaction.	Somewhat excessively drained.[2]	Moderate available water capacity; high intake rate.	Rapid permeability in substratum; coarse sands and gravels.	Rapid permeability in substratum; coarse sands and gravels; moderate available water capacity.	Unstable trench walls.
Fair to poor stability; susceptible to piping; erodible; somewhat pervious.	Well drained [2]-------	High available water capacity; rapid intake rate.	Flood plain soil; nearly level; adequate outlets difficult to locate.[2]	Flood plain soil; nearly level; adequate outlets difficult to locate.[2]	Subject to flooding; unstable trench walls in substratum.
Good compaction; fair to good stability; stony soil material; erodible.	Well drained; some seepage spots; stony soil material.[2]	Moderate available water capacity; moderate intake rate.	Seepage across top of compact substratum; stony soil material; moderately slow permeability in substratum.	Seepage across top of compact substratum; stony soil material; moderately slow permeability in substratum.	Firm and stable substratum; stony soil material; seepage in spots.
Fair to good stability; good compaction; stony soil material; erodible.	Seasonal water table; moderately slow permeability in compact substratum; stony soil material.	Moderate to high available water capacity; moderate intake rate.	Seepage across top of compact substratum; stony soil material; moderately slow permeability in substratum.	Seepage across top of compact substratum; stony soil material; moderately slow permeability in substratum.	Seasonal water table; firm, stable substratum; stony soil material.

TABLE 7.—*Interpretations of*

Soils series and map symbols	Suitability as a source of—[1]			Soil features affecting—	
	Topsoil	Sand and gravel	Road fill	Highway and road location	Farm ponds: Reservoir area
Podunk: Py	Good	Poor to good for sand: excess fines; poor for gravel.	Good below a depth of 2½ feet: binder needed; seasonal water table.	Subject to flooding; seasonal water table.	Subject to flooding; rapid permeability in substratum; seasonal water table.
Ridgebury: RbA, RgA	Poor: coarse fragments.	Poor: excess fines.	Fair to good: high in fines; stony soil material; high water table may be limiting.	High water table; seepage in cuts along compact substratum; susceptible to frost heaving of stones on cuts and in road subgrades.	Moderately slow permeability in compact substratum; high water table; stony soil material.
Rumney: Ru	Fair in substratum.	Poor: excess fines.	Fair to good: high in fines; stony soil material; high water table.	Subject to flooding; high water table; highly susceptible to frost heave.	Subject to flooding; high water table; rapid permeability in substratum.
*Saco Mapped only in a complex with a Limerick soil.	Poor: organic surface layer.	Poor: excess fines.	Fair: high in fines; high water table.	Subject to frequent flooding; high water table; highly susceptible to frost heave.	Subject to frequent flooding; high water table; moderate permeability.
Saugatuck: Sd	Poor: sandy	Fair to good for sand: high in fines; poor for gravel.	Fair to good: binder needed; high water table.	High water table; highly susceptible to frost heave.	High water table; rapid permeability; slow permeability in the cemented subsoil.
Scantic: Sn	Good: high clay content in places.	Poor: excess fines.	Poor: high in clays.	Highly susceptible to frost heave; cut slopes are unstable; seepage; low shear strength.	Slow to very slow permeability; high water table.
Scarboro: So	Fair: sandy; high content of organic matter.	Poor to good for sand below depth of 2½ feet; poor for gravel.	Good below depth of 2½ feet: high water table.	High water table; highly susceptible to frost heave.	High water table; rapid permeability in substratum.
Suffield: SuC2, SuD2, SuE2	Good	Poor: excess fines.	Poor: high in clays.	Highly susceptible to frost heave; cut slopes are unstable; clay substratum.	Slow to very slow permeability; deep water table.
Swanton: Sz	Fair: clayey substratum.	Poor: excess fines.	Poor: high in clay in substratum; high water table may be limiting.	High water table; highly susceptible to frost heave; clayey substratum materials.	Slow permeability in clayey substratum; high water table.
Walpole: Wa	Fair: coarse fragments in substratum.	Poor to good below depth of 2 feet: excess fines in some strata.	Fair to good below depth of 2 feet: high in fines; high water table may be limiting.	High water table; highly susceptible to frost heave.	High water table; rapid permeability in substratum.

See footnotes at end of table.

engineering properties—Continued

Soil features affecting—Continued					
Farm ponds—Con. Embankment	Drainage	Sprinkler irrigation	Terraces and diversions	Grassed waterways	Pipeline (construction and maintenance)
Fair to poor stability; susceptible to piping; erodible; somewhat pervious.	Seasonal water table; rapid permeability in substratum; adequate outlets difficult to locate.	High available water capacity; moderate intake rate.	Flood plain soil; nearly level; subject to flooding.[2]	Flood plain soil; nearly level slopes; subject to flooding.[2]	Subject to flooding; unstable trench walls; seasonal water table.
Fair to good stability; good compaction; stony soil material.	Moderately slow permeability in compact substratum; seepage along compact layer; high water table; stony soil material.	High water table; adequate moisture generally is available.[2]	Seepage along compact layer; high water table; stony soil material.	Seepage along compact layer; high water table; stony soil material.	High water table; firm, stable substratum; stony soil material.
Fair to poor stability; piping; erodible; pervious in places.	High water table; adequate outlets difficult to locate.	High water table; adequate moisture generally is available.[2]	Flood plain; nearly level; subject to flooding.[2]	Flood plain; nearly level; subject to flooding.[2]	Subject to flooding; high water table; unstable trench walls.
Fair to poor stability; piping; high organic-matter content; piping erodible.	High water table; adequate outlets difficult to locate; subject to frequent flooding.	Excess moisture generally is available.[2]	Flood plain; frequently flooded; nearly level slopes.[2]	Flood plain; frequently flooded; nearly level.[2]	Subject to frequent flooding; unstable trench walls; high water table.
Fair to good compaction; fair to poor stability; pervious.	High water table; cemented layer in subsoil.	High water table; adequate moisture generally is available.[2]	Nearly level; high water table.[2]	Nearly level; high water table.[2]	High water table; unstable trench walls.
Hazard of erosion; poor to good stability and compaction.	High water table; slow to very slow permeability.	High water table; adequate moisture generally is available.[2]	Hazard of erosion; high water table; nearly level.	Hazard of erosion; high water table; nearly level.	Low shear strength; high water table; unstable trench walls.
Fair to poor stability; fair to good compaction; pervious.	Rapid permeability; high water table.	High water table; excess moisture generally is available.[2]	Nearly level slopes; high water table.[2]	Nearly level; high water table.[2]	High water table; unstable trench walls.
Erodible; fair to good stability and compaction.	Well drained	High available water capacity; slow intake rate; erodible.	Hazard of erosion; clayey substratum.	Hazard of erosion; clayey substratum.	Low shear strength.
Erodible; fair to good stability and compaction.	High water table; slow permeability in substratum.	High water table; excess moisture generally is available; moderate available water capacity.[2]	Nearly level; adequate outlets difficult to locate; high water table.[2]	Nearly level; adequate outlets difficult to locate; high water table.[2]	High water table; low shear strength in substratum.
Pervious; fair to poor stability; fair to good compaction.	High water table; rapid permeability.	High water table; excess moisture generally is available.[2]	On lowest part of landscape; nearly level.[2]	On lowest part of landscape; nearly level.[2]	High water table; unstable trench walls.

TABLE 7.—*Interpretations of*

Soils series and map symbols	Suitability as a source of—[1]			Soil features affecting—	
	Topsoil	Sand and gravel	Road fill	Highway and road location	Farm ponds: Reservoir area
Whately: Wg	Poor: organic surface layer.	Poor: excess fines.	Poor: high in clays; high water table may be limiting.	High water table; highly susceptible to frost heave; low shear strength in clay substratum.	Very slow permeability in substratum; high water table.
Whitman: Wh	Poor: coarse fragments.	Poor: excess fines.	Fair to good: high in fines; stony soil material; high water table may be limiting.	High water table; stony soil material; susceptible to frost heaving of stones on cuts and in road subgrades.	Slow permeability in substratum; high water table; stony soil material.
Windsor: WmB, WmC, WmD.	Fair: sandy	Poor to good for sand; poor for gravel.	Good: binder needed.	Cut slopes are unstable; hazard of erosion; cut slopes are difficult to vegetate because of droughtiness.	Rapid permeability; deep water table.
Woodbridge: WrB, WrC, WsB, WsC.	Poor: coarse fragments.	Poor: excess fines.	Fair to good: high in fines; stony soil material; seasonal water table.	Seepage in cut slopes; stony soil material; seasonal water table; frost heaving of stones on cut slopes and in road cuts.	Moderately slow permeability in substratum; stony soil material; seasonal water table.

[1] Does not indicate quality of deposit.

Town and Country Planning

Cumberland County is primarily a rural area although it includes within its boundaries Portland, which is Maine's largest and most rapidly growing city. The population of the county is growing, and in recent years there has been an increase in residential and commercial use of the area. Its strategic location and excellent harbor facilities indicate that its population is likely to increase rapidly in the future.

Table 8 is a guide for evaluating areas for specified use. The limitations are rated as slight, moderate, severe, or very severe according to the degree to which the soil is limited in its specific nonfarm uses. A rating of *slight* indicates that the soil has few or no limitations and is considered desirable for the use named. A rating of *moderate* shows that a hazard exists, but that it can be overcome or corrected. A rating of *severe* indicates that use of the soil is seriously limited by a hazard or restriction that is difficult to overcome. A rating of *very severe* indicates one or more limitations of such magnitude that use of the soil for the indicated purpose would require major outlays of time, money, and labor.

Any given soil property does not restrict all types of urban or recreational uses equally. For example, slow permeability and impeded drainage that are moderate limitations for many uses can severely limit the use of a soil for the disposal of sewage effluent from septic tanks.

The following are properties that limit the soils of the county in their suitability for each use specified in table 8. These limitations are not listed in order of importance. The interpretations in table 8 are not a substitute for onsite investigations.

Filter fields for sewage disposal: Permeability of the soil, depth to a seasonal high water table, natural drainage, depth to an impervious layer or bedrock, stoniness, slope, hazard of flooding, and hazard of water-table contamination.

Sewage lagoons: Soil permeability, depth to an impervious layer or bedrock, stoniness, slope, hazard of flooding, hazard of water-table contamination, and organic-matter content.

Sanitary land fill (trench method): Depth to water table, natural drainage, depth to hard layer or bedrock, soil permeability, hazard of flooding, slope, stability of surface and substratum, stickiness, shrink-swell potential, and erodibility.

Earth-covered fallout shelters: Refers to shelters half of which are below ground level and a minimum of 3 feet of earth covering the entire shelter. Shelters need to be

engineering properties—Continued

Soil features affecting—Continued					
Farm ponds—Con. Embankment	Drainage	Sprinkler irrigation	Terraces and diversions	Grassed waterways	Pipeline (construction and maintenance)
Hazard of erosion; fair to poor stability; poor to good compaction.	High water table; outlets may be difficult to locate; very slow permeability in substratum.	High water table; excess moisture generally is available.[2]	On lowest part of landscape; nearly level.[2]	On lowest part of landscape; nearly level.[2]	High water table; low shear strength in substratum.
Stony soil material; fair to poor stability; poor to good compaction.	High water table; outlets may be difficult to locate; slow permeability in substratum.	High water table; excess moisture generally is available.[2]	On lowest part of landscape; nearly level.[2]	On lowest part of landscape; nearly level.[2]	High water table; firm substratum; stony soil material.
Pervious; susceptible to piping; hazard of erosion; fair to poor stability; fair to good compaction.	Excessively drained.[2]	Low available water capacity.	Hazard of erosion; difficult to vegetate; rapid permeability.	Hazard of erosion; difficult to vegetate; rapid permeability.	Unstable trench walls.
Fair to good stability; poor to good compaction; stony soil material.	Moderately slow to slow permeability in substratum; seepage spots; seasonal water table.	Moderate available water capacity; moderate intake rate.	Seepage spots; stony soil material.	Seepage spots; stony soil material.	Firm, stable substratum; stony soil material; seasonal water table.

[2] Practice not applicable or not needed.

dry or have a minimum soil drainage problem. Soil and site factors are: drainage class, depth to bedrock, hazard of flooding, slope, stoniness and rockiness, and permeability.

Residences on public sewage systems: Depth to bedrock, slope, erodibility, drainage, stoniness or rockiness, water table, flooding, frost susceptibility, and shear strength.

Pipe and sewer lines: Depth to bedrock, depth to water table, slope, stoniness and rockiness, texture and consistence of substratum (as these soil properties effect stability of trench walls), and shear strength.

Cemetery: Depth to bedrock, depth to water table, drainage, presence of fragipan or claypan, texture, stoniness or rockiness, slope, and flooding.

Developed tent, picnic, or trailer sites: Slope, drainage or general wetness, stoniness or rockiness, depth to bedrock, soil texture, flooding, erodibility, plasticity or stickiness, and moisture holding capacity.

Camp or cottage sites: Refers to the development of sites for small buildings such as hunting, fishing, or recreational camps designed primarily for seasonal or intermittent use. This part-time use places less pressure upon land areas in regard to acceptance of septic effluent, ability to maintain vegetation, and foundation requirements as compared to urban sites used year-round. This less frequent use permits a wider range of interpretation regarding site requirements. The soil and site factors important to this use are: drainage or general wetness, stoniness or rockiness, depth to bedrock, depth to water table, flooding, soil texture, slope, and depth to fragipan or claypan.

Playing fields, shooting ranges: Refers to the development of sites used for play areas, such as ball fields, playgrounds, archery or gunnery ranges. Play areas, such as football or baseball fields, that are used intensively by high schools or similar institutions are not considered for these interpretations. The soil factors that influence the suitability of a site for this use are: slope, drainage or general wetness, texture of the surface, stoniness and rockiness, depth to bedrock, depth to water table, flooding, moisture holding capacity, erodibility, rapidity of runoff, stickiness, plasticity, and permeability.

Golf fairways—landscaping: Refers to the development of golf fairways only. Greens are special areas formed and molded from selected soil material and are not subject to the common soil limitations. The soil factors involved are: slope, stoniness or rockiness, texture, wetness (general), flooding, droughtiness, and erodibility.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Au Gres loamy sand.	Severe: water table at a depth of 1 foot or less.	Severe: rapid permeability in substratum; fluctuating water table.	Severe: rapid permeability; fluctuating water table; coarse texture.	Severe: excessive wetness; high water table.	Severe: high water table; susceptibility to frost action.
Belgrade very fine sandy loam, 0 to 8 percent slopes.	Severe: slow to moderate permeability; seasonal water table.	Severe: lateral seepage; possible pollution of ground water.	Severe: seasonal water table; possible pollution of ground water.	Severe: seasonal water table; seepage.	Severe: seasonal water table; seepage; high susceptibility to frost action.
Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded.	Severe: slow to moderate permeability; seasonal water table.	Severe: lateral seepage; possible pollution of ground water; slope.	Severe: seasonal water table; possible pollution of ground water; slope.	Severe: seasonal water table; seepage.	Severe: seasonal water table; seepage; high susceptibility to frost action.
Biddeford silt loam.	Very severe: high water table; slow to very slow permeability.	Slight	Very severe: high water table; ponding; sticky and plastic; high organic-matter content.	Very severe: high water table; difficult to drain; excess moisture most of year; low shear strength.	Very severe: high water table; slow to very slow permeability; low shear strength; high susceptibility to frost action.
Buxton silt loam, 3 to 8 percent slopes.	Very severe: slow to very slow permeability.	Moderate: slope	Severe: slow to very slow permeability; ponding of container pods.	Severe: slow to very slow permeability; ponding; seasonal water table; low shear strength.	Severe: seasonal water table; high susceptibility to frost action; unstable when wet.
Buxton silt loam, 8 to 15 percent slopes, eroded.	Very severe: slow to very slow permeability.	Severe: slope	Severe: slow to very slow permeability; ponding of container pods; slope.	Severe: slow to very slow permeability; ponding; seasonal water table; low shear strength.	Severe: seasonal water table; high susceptibility to frost action; unstable when wet.
Canaan sandy loam, 3 to 8 percent slopes.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.
Canaan sandy loam, 8 to 15 percent slopes.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.
Canaan very rocky sandy loam, 3 to 8 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; rock outcrops.
Canaan very rocky sandy loam, 8 to 20 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; rock outcrops.
Canaan very rocky sandy loam, 20 to 60 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; rock outcrops; slope.

related to town and country planning

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Severe: high water table; cut faces unstable.	Severe: high water table; road maintenance difficult.	Severe: high water table; wetness during season of use.	Severe: high water table; seasonal wetness.	Severe: high water table; wetness; low fertility; slow runoff.	Severe: high water table; wetness; low fertility; slow runoff.
Moderate: seasonal water table; cuts unstable when soil is wet; piping.	Moderate: seasonal water table.	Severe: seasonal wetness; slow to moderate permeability.	Moderate: seasonal water table.	Moderate: seasonal wetness; dries slowly.	Moderate: seasonal wetness; dries slowly.
Severe: seasonal water table; cuts unstable when soil is wet; slope; erodibility; piping.	Moderate: seasonal water table; erodibility.	Severe: seasonal wetness; slow to moderate permeability; erodibility.	Moderate: seasonal water table; erodibility.	Severe: seasonal wetness; dries slowly; slope.	Moderate: seasonal wetness; dries slowly.
Very severe: high water table; clayey substratum; differential settlings; sloughing possible; low shear strength.	Very severe: high water table; clayey substratum; slow surface runoff; excess wetness most of year.	Very severe: excess wetness; high water table; slow to very slow permeability; slow surface runoff.	Very severe: high water table; excess wetness most of year; slow to very slow permeability; slow surface runoff.	Very severe: excess wetness; slow surface runoff; sticky and plastic when wet; high organic-matter content.	Very severe: excess wetness; slow runoff; high organic-matter content; sticky and plastic when wet.
Severe: seasonal water table; low shear strength.	Severe: seasonal water table; clayey substratum; seasonal wetness.	Severe: slow to very slow permeability; high water table; sticky and plastic when wet.	Severe: slow to very slow permeability; high susceptibility to frost action; sticky and plastic when wet.	Moderate: sticky and plastic when wet; dries slowly; seasonal wetness.	Moderate: sticky and plastic when wet; seasonal wetness.
Severe: seasonal water table; low shear strength.	Severe: seasonal water table; clayey substratum; seasonal wetness.	Severe: very slow permeability; high water table; sticky and plastic when wet.	Severe: slow to very slow permeability; high susceptibility to frost action; sticky and plastic when wet.	Severe: sticky and plastic when wet; dries slowly; seasonal wetness; slope.	Moderate: sticky and plastic when wet; seasonal wetness.
Severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock; droughty.	Severe: shallow to bedrock; droughty.
Severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Very severe: shallow to bedrock; droughty; slope.	Severe: shallow to bedrock; droughty.
Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: rock outcrops; droughty.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops; droughty.	Very severe: rock outcrops; droughty.
Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; droughty.	Very severe: rock outcrops; droughty.

TABLE 8.—*Limitations for specified use*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Coastal beaches	Very severe: unstable soil; high water table; hazard of ground water pollution.	Very severe: coarse texture; very rapid permeability; unstable soil conditions.	Very severe: unstable soil; hazard of ground water pollution.	Very severe: unstable soil; flooding.	Severe: unstable soil; flooding.
Cut and fill land. Onsite investigation needed.					
Deerfield loamy sand, 0 to 3 percent slopes.	Severe: seasonal water table; rapid permeability; hazard of ground water pollution.	Very severe: pervious substratum; hazard of ground water pollution; seasonal water table.	Severe: rapid permeability; hazard of ground water pollution; seasonal water table.	Severe: seasonal water table.	Severe: seasonal water table.
Deerfield loamy sand, 3 to 8 percent slopes.	Severe: seasonal water table; rapid permeability; hazard of ground water pollution.	Very severe: pervious substratum; hazard of ground water pollution; seasonal water table.	Severe: rapid permeability; hazard of ground water pollution; seasonal water table.	Moderate: seasonal water table.	Moderate: seasonal water table; sufficient slope for drainage.
Dune land	Very severe: rapid permeability; hazard of sea water and/or fresh water pollution; variable water table.	Very severe: pervious material; hazard of sea water and/or fresh water pollution; short slopes.	Very severe: rapid permeability; hazard of sea water and/or fresh water pollution; short slopes.	Very severe: unstable soil.	Severe: unstable soil; short slopes; variable water table.
Elmwood fine sandy loam, 0 to 8 percent slopes.	Very severe: slow permeability; seasonal water table.	Moderate: permeable surface material.	Severe: lateral seepage; hazard of stream pollution.	Severe: seasonal water table; seepage; low shear strength.	Severe: seasonal water table; seepage; low shear strength.
Gravel pits. Onsite investigation needed.					
Hartland very fine sandy loam, 3 to 8 percent slopes.	Severe: moderately slow to moderate permeability in substratum.	Severe: variable permeability; piping.	Slight	Slight	Slight
Hartland very fine sandy loam, 8 to 15 percent slopes, eroded.	Severe: moderately slow to moderate permeability in substratum.	Very severe: slope	Severe: slope; erodibility; hazard of stream pollution.	Slight	Moderate: slope; erodibility.
Hartland very fine sandy loam, 15 to 25 percent slopes, eroded.	Severe: slope; effluent seepage.	Very severe: slope	Severe: slope; erodibility; hazard of stream pollution.	Slight	Severe: slope; erodibility.
Hermon sandy loam, 3 to 8 percent slopes.	Slight	Severe: pervious material; seepage.	Severe: moderately rapid permeability; hazard of ground water pollution.	Slight	Slight

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Severe: trench walls slough; high corrosion of pipes.	Very severe: unstable soil; flooding.	Severe: unstable surface layer; flooding.	Severe: unstable surface layer; flooding.	Very severe: unstable surface layer; flooding.	Very severe: unstable surface layer; flooding.
Moderate: seasonal water table; unstable substratum; sloughing.	Moderate: seasonal water table.	Moderate: seasonal water table.	Moderate: seasonal water table.	Moderate: seasonal wetness.	Moderate: seasonal wetness.
Moderate: seasonal water table; unstable substratum; sloughing.	Moderate: seasonal water table.	Moderate: seasonal water table.	Moderate: seasonal water table.	Moderate: seasonal wetness.	Moderate: seasonal wetness.
Severe: unstable soil; trench walls slough.	Severe: droughty; unstable surface layer; difficult to vegetate; variable water table.	Severe: unstable surface layer; rapid permeability; hazard of sea water and/or fresh water pollution.	Severe: unstable surface layer; rapid permeability; hazard of sea water and/or fresh water pollution.	Severe: droughty; rapid permeability.	Severe: droughty; rapid permeability.
Severe: seasonal water table; low shear strength in substratum; cuts unstable when soil is wet.	Severe: seasonal water table; silty clay loam substratum.	Moderate: seasonal wetness; slow permeability in substratum.	Moderate: seasonal wetness; slow permeability in substratum.	Moderate: seasonal wetness; dries slowly.	Moderate: seasonal wetness; dries slowly; seepage areas.
Moderate: piping; moderately stable.	Slight	Slight	Slight	Slight	Slight.
Severe: slope; piping; moderately stable.	Slight	Severe: slope; erodibility.	Slight	Severe: slope; erodibility.	Slight.
Severe: slope; piping; moderately stable.	Severe: slope; erodibility.	Severe: slope; erodibility.	Severe: slope; erodibility.	Severe: slope; erodibility.	Severe: slope; erodibility.
Slight	Moderate: moderately rapid permeability; droughty; low fertility.	Slight	Slight	Moderate: moderately rapid permeability; droughty.	Moderate: moderately rapid permeability; droughty.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Hermon sandy loam, 8 to 15 percent slopes.	Moderate: slope; effluent seepage.	Very severe: pervious material; seepage; slope.	Severe: moderately rapid permeability; hazard of ground water pollution; slope; erodibility.	Slight	Slight
Hermon sandy loam, 15 to 25 percent slopes.	Severe: slope; effluent seepage.	Very severe: pervious material; seepage; slope.	Severe: moderately rapid permeability; hazard of ground water pollution; slope; erodibility.	Slight	Severe: slope
Hermon very stony sandy loam, 3 to 8 percent slopes.	Slight	Severe: pervious material; seepage; stoniness.	Severe: moderately rapid permeability; hazard of ground water pollution.	Slight	Slight
Hermon very stony sandy loam, 8 to 15 percent slopes.	Moderate: slope; effluent seepage.	Very severe: pervious material; seepage; stoniness; slope.	Severe: moderately rapid permeability; hazard of ground water pollution.	Slight	Slight
Hermon very stony sandy loam, 15 to 30 percent slopes.	Severe: slope; effluent seepage.	Very severe: pervious material; seepage; stoniness; slope.	Severe: moderately rapid permeability; hazard of ground water pollution.	Slight	Severe: slope
Hermon extremely stony sandy loam, 8 to 20 percent slopes.	Very severe: excessive stoniness.	Very severe: excessive stoniness; slope.	Very severe: excessive stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.
Hermon extremely stony sandy loam, 20 to 60 percent slopes.	Very severe: excessive stoniness; slope.	Very severe: excessive stoniness; slope.	Very severe: excessive stoniness; slope.	Very severe: excessive stoniness.	Very severe: excessive stoniness.
Hinckley gravelly sandy loam, 3 to 8 percent slopes.	Moderate: very rapid permeability; hazard of ground water pollution.	Very severe: very rapid permeability; gravelly substratum.	Severe: very rapid permeability; hazard of ground water pollution.	Slight	Slight
Hinckley gravelly sandy loam, 8 to 15 percent slopes.	Moderate: very rapid permeability; hazard of ground water pollution.	Very severe: very rapid permeability; gravelly substratum.	Severe: very rapid permeability; hazard of ground water pollution; slope.	Slight	Slight
Hinckley gravelly sandy loam, 15 to 25 percent slopes.	Severe: very rapid permeability; hazard of ground water pollution; slope; seepage.	Very severe: very rapid permeability; gravelly substratum; slope.	Very severe: very rapid permeability; hazard of ground water pollution; slope.	Slight	Severe: slope

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Slight	Moderate: moderately rapid permeability; droughty; low fertility.	Severe: slope	Moderate: slope	Severe: moderately rapid permeability; droughty; slope.	Moderate: moderately rapid permeability; droughty.
Moderate: slope	Severe: moderately rapid permeability; droughty; low fertility; slope; erodibility.	Very severe: slope	Severe: slope	Very severe: moderately rapid permeability; droughty; slope.	Severe: moderately rapid permeability; droughty; slope.
Slight	Very severe: moderately rapid permeability; droughty; low fertility.	Severe: stoniness	Moderate: stoniness.	Severe: moderately rapid permeability; droughty; stoniness.	Very severe: moderately rapid permeability; droughty; stoniness.
Slight	Very severe: moderately rapid permeability; droughty; low fertility.	Severe: stoniness; slope.	Moderate: stoniness; slope.	Very severe: moderately rapid permeability; droughty; stoniness; slope.	Very severe: moderately rapid permeability; droughty; stoniness.
Moderate: slope	Very severe: moderately rapid permeability; droughty; low fertility; slope.	Very severe: stoniness; slope.	Severe: stoniness; slope.	Very severe: moderately rapid permeability; droughty; stoniness; slope.	Very severe: moderately rapid permeability; droughty; stoniness.
Moderate: stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.
Severe: stoniness; slope.	Very severe: excessive stoniness; slope.	Very severe: excessive stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.	Very severe: excessive stoniness.
Severe: unstable substratum; cobbly; sloughing.	Moderate: very rapid permeability; droughty; cobbly.	Slight	Moderate: low available water capacity; difficult to vegetate; very rapid permeability.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; low fertility.	Moderate: low available water capacity; difficult to vegetate; low fertility.
Severe: unstable substratum; cobbly; sloughing.	Moderate: very rapid permeability; droughty; cobbly.	Severe: slope; droughty.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; slope.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; low fertility; slope.	Moderate: low available water capacity; difficult to vegetate; low fertility.
Very severe: unstable substratum; cobbly; slope; sloughing.	Severe: very rapid permeability; droughty; cobbly; slope.	Severe: slope; droughty.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; slope.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; low fertility; slope.	Severe: low available water capacity; difficult to vegetate; low fertility; slope.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Hinckley-Suffield complex, 3 to 8 percent slopes:					
Hinckley	Moderate: very rapid permeability; hazard of ground water pollution.	Severe: very rapid permeability; gravelly substratum.	Severe: very rapid permeability.	Slight	Slight
Suffield	Very severe: slow to very slow permeability in substratum.	Moderate: slope	Moderate: slow to very slow permeability; ponding.	Slight	Moderate: low shear strength; seepage.
Hinckley-Suffield complex, 8 to 15 percent slopes:					
Hinckley	Moderate: very rapid permeability; hazard of ground water pollution.	Very severe: very rapid permeability; gravelly substratum.	Severe: very rapid permeability; hazard of ground water pollution.	Slight	Slight
Suffield	Very severe: slow to very slow permeability in substratum.	Severe: slope	Moderate: slope; rapid runoff; hazard of surface water pollution.	Slight	Moderate: low shear strength; seepage.
Hinckley-Suffield complex, 15 to 25 percent slopes:					
Hinckley	Severe: very rapid permeability; hazard of ground water pollution; seepage.	Very severe: very rapid permeability; gravelly substratum; slope.	Very severe: very rapid permeability; hazard of ground water pollution.	Slight	Severe: slope
Suffield	Very severe: slow to very slow permeability in substratum; slope; seepage.	Very severe: slope	Very severe: slope; erodibility; rapid runoff; hazard of surface water pollution.	Slight	Severe: low shear strength; seepage.
Hollis fine sandy loam, 3 to 8 percent slopes.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.
Hollis fine sandy loam, 8 to 15 percent slopes.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.
Hollis fine sandy loam, 15 to 25 percent slopes.	Very severe: shallow to bedrock; slope; seepage.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; slope; possible pollution of surface water and stream.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; slope.
Hollis very rocky fine sandy loam, 3 to 8 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Severe: unstable substratum; cobbly; sloughing.	Moderate: very rapid permeability; droughty; cobbly.	Slight	Moderate: low available water capacity; difficult to vegetate; very rapid permeability.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; low fertility.	Moderate: low available water capacity; difficult to vegetate; low fertility.
Severe: low shear strength; sticky and plastic when wet; ponding.	Severe: sticky and plastic when wet; seepage in cuts.	Moderate: slow to very slow permeability; sticky and plastic when wet.	Slight	Moderate: sticky and plastic when wet.	Slight.
Severe: unstable substratum; cobbly; sloughing.	Moderate: very rapid permeability; droughty; cobbly.	Severe: slope; droughty.	Severe: low available water capacity; difficult to vegetate.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; low fertility; slope.	Moderate: low available water capacity; difficult to vegetate; low fertility.
Severe: low shear strength; sticky and plastic when wet; ponding.	Severe: sticky and plastic when wet; seepage in cuts.	Very severe: slow to very slow permeability; sticky and plastic when wet; slope.	Moderate: slope	Severe: sticky and plastic when wet; slope.	Moderate: slope; erodibility.
Very severe: unstable substratum; cobbly; slope; sloughing.	Severe: very rapid permeability; droughty; cobbly; slope.	Severe: slope; droughty.	Severe: low available water capacity; difficult to vegetate.	Severe: low available water capacity; difficult to vegetate; very rapid permeability; low fertility; slope.	Severe: low available water capacity; difficult to vegetate; low fertility; slope.
Severe: low shear strength; sticky and plastic when wet; slope.	Very severe: sticky and plastic when wet; seepage in cuts.	Very severe: slow to very slow permeability; sticky and plastic when wet; slope.	Very severe: slope; erodibility.	Very severe: sticky and plastic when wet; slope.	Very severe: slope; erodibility.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock; droughty.	Severe: shallow to bedrock; droughty.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock; droughty; slope.	Severe: shallow to bedrock; droughty.
Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; droughty; slope.	Very severe: shallow to bedrock; droughty; slope.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Hollis very rocky fine sandy loam, 8 to 20 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.
Hollis very rocky fine sandy loam, 20 to 35 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.
Limerick-Saco silt loams:					
Limerick	Very severe: high water table; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: variable permeability; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: variable permeability; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: high water table; frequent flooding; excessive wetness; high susceptibility to frost action.	Very severe: high water table; frequent flooding; excessive wetness; high susceptibility to frost action.
Saco	Very severe: high water table; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: frequent flooding; hazard of surface stream and ground water pollution.	Very severe: frequent flooding; hazard of surface stream and ground water pollution.	Very severe: frequent flooding; high water table.	Very severe: frequent flooding; high water table.
Lyman fine sandy loam, 3 to 8 percent slopes.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.
Lyman fine sandy loam, 8 to 15 percent slopes.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.
Lyman very rocky fine sandy loam, 3 to 8 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.
Lyman very rocky fine sandy loam, 8 to 20 percent slopes.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock.
Lyman very rocky fine sandy loam, 20 to 45 percent slopes.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; slope.
Made land. Onsite investigation needed.					
Melrose fine sandy loam, 8 to 15 percent slopes.	Severe: slow to very slow permeability in substratum.	Severe: silty clay at a depth of 1½ to 3 feet; upper layer compacts poorly; slope.	Moderate: slope; seepage.	Slight	Moderate: low shear strength in substratum.
Merrimac fine sandy loam, 3 to 8 percent slopes.	Moderate: rapid permeability; hazard of ground water pollution.	Very severe: rapid permeability; pervious when compacted.	Severe: rapid permeability; hazard of ground water pollution.	Slight	Slight

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.
Severe: high water table; frequent flooding; unstable substratum; sloughing.	Very severe: high water table; frequent flooding.	Very severe: high water table; slow surface runoff; excessive wetness; frequent flooding.	Very severe: high water table; slow surface runoff; excessive wetness; frequent flooding.	Very severe: excessive wetness; slow surface runoff; frequent flooding.	Very severe: excessive wetness; slow surface runoff; frequent flooding.
Very severe: frequent flooding; high water table; unstable substratum.	Very severe: high water table; frequent flooding.	Very severe: high water table; slow surface runoff; excessive wetness; frequent flooding.	Very severe: high water table; slow surface runoff; excessive wetness most of year; frequent flooding.	Very severe: frequent flooding; slow surface runoff; excessive wetness most of year.	Very severe: frequent flooding; slow surface runoff; excessive wetness most of year.
Severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock; droughty.
Severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.	Very severe: shallow to bedrock; droughty; slope.	Severe: shallow to bedrock; droughty.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.
Very severe: shallow to bedrock.	Very severe: shallow to bedrock.	Severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.	Very severe: shallow to bedrock; rock outcrops.
Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; slope.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; slope.	Very severe: shallow to bedrock; rock outcrops; slope.
Severe: low shear strength in substratum.	Slight	Severe: slope; erodibility.	Moderate: slope; seepage of septic effluent; erodibility.	Severe: slope; erodibility.	Slight.
Severe: unstable substratum; sloughing.	Slight	Slight	Slight	Slight	Moderate: rapid permeability; somewhat droughty.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Merrimac fine sandy loam, 8 to 15 percent slopes.	Moderate: rapid permeability; hazard of ground water pollution.	Very severe: rapid permeability; pervious when compacted; slope.	Severe: rapid permeability; hazard of ground water pollution; slope.	Slight	Slight
Ondawa fine sandy loam.	Very severe: flooding.	Very severe: pervious when compacted; flooding; hazard of surface stream and ground water pollution; moderately rapid permeability.	Very severe: flooding; moderately rapid permeability; hazard of surface stream and ground water pollution.	Very severe: flooding.	Very severe: flooding.
Paxton fine sandy loam, 3 to 8 percent slopes.	Severe: moderately slow permeability.	Moderate: pervious surface over compact substratum.	Slight	Slight	Slight
Paxton fine sandy loam, 8 to 15 percent slopes.	Severe: moderately slow permeability.	Severe: slope	Moderate: slope; seepage.	Slight	Slight
Paxton fine sandy loam, 15 to 25 percent slopes.	Very severe: moderately slow permeability; slope; seepage.	Very severe: slope	Very severe: slope; seepage.	Slight	Severe: slope
Paxton very stony fine sandy loam, 3 to 8 percent slopes.	Severe: moderately slow permeability.	Moderate: pervious surface over compact substratum.	Slight	Slight	Slight
Paxton very stony fine sandy loam, 8 to 15 percent slopes.	Severe: moderately slow permeability.	Severe: slope	Moderate: slope	Slight	Slight
Paxton very stony fine sandy loam, 15 to 25 percent slopes.	Very severe: moderately slow permeability; slope; seepage.	Very severe: slope	Very severe: slope	Slight	Severe: slope
Peru fine sandy loam, 0 to 8 percent slopes.	Severe: seasonal water table; slow permeability.	Moderate: slope	Slight	Moderate: seasonal water table; slow permeability.	Moderate: seasonal water table; seepage.
Peru fine sandy loam, 8 to 15 percent slopes.	Severe: seasonal water table; slow permeability.	Severe: slope	Moderate: slope; seepage.	Very severe: slope; seepage.	Moderate: seasonal water table; seepage.
Peru very stony fine sandy loam, 0 to 8 percent slopes.	Severe: seasonal water table; slow permeability.	Moderate: slope	Slight	Moderate: seasonal water table; slow permeability.	Moderate: seasonal water table; seepage.
Peru very stony fine sandy loam, 8 to 15 percent slopes.	Severe: seasonal water table; slow permeability.	Severe: slope	Moderate: slope; seepage.	Very severe: slope; seepage.	Moderate; seasonal water table; seepage.

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Severe: unstable substratum; sloughing.	Slight	Severe: slope; erodibility.	Severe: slope; erodibility.	Severe: slope	Moderate: rapid permeability; somewhat droughty.
Moderate: sloughing; flooding.	Very severe: flooding.	Severe: flooding; surface stream and ground water pollution from septic effluent.	Severe: flooding; surface stream and ground water pollution from septic effluent.	Moderate: flooding.	Moderate: flooding.
Slight	Severe: compact substratum.	Moderate: moderately slow permeability; dries slowly after rains.	Moderate: moderately slow permeability; dries slowly after rains.	Moderate: moderately slow permeability; dries slowly after rains.	Slight.
Slight	Severe: compact substratum.	Severe: moderately slow permeability; slope; seepage.	Moderate: moderately slow permeability; slope; seepage.	Very severe: slope; seepage in cuts.	Slight.
Moderate: slope	Very severe: compact substratum; slope.	Severe: moderately slow permeability; slope; seepage.	Severe: moderately slow permeability; slope; seepage.	Very severe: slope; seepage in cuts.	Severe: slope.
Slight	Very severe: compact substratum; stoniness.	Moderate: moderately slow permeability; dries slowly after rain; stoniness.	Moderate: moderately slow permeability; dries slowly after rains.	Severe: moderately slow permeability; dries slowly after rains; stoniness.	Very severe: stoniness.
Slight	Very severe: compact substratum; stoniness.	Severe: moderately slow permeability; slope; seepage; stoniness.	Moderate: moderately slow permeability; slope; seepage.	Very severe: slope; seepage in cuts; stoniness.	Very severe: stoniness.
Moderate: slope	Very severe: compact substratum; stoniness; slope.	Severe: moderately slow permeability; slope; seepage; stoniness.	Severe: moderately slow permeability; slope; seepage.	Very severe: slope; seepage in cuts; stoniness.	Very severe: stoniness; slope.
Slight	Severe: compact substratum; seasonal water table.	Moderate: slow permeability for septic sewage; seasonal wetness.	Moderate: slow permeability for septic sewage; seasonal wetness.	Severe: seasonal wetness; dries slowly after rains.	Moderate: seasonal wetness.
Slight	Severe: compact substratum; seasonal water table.	Severe: slow permeability for septic sewage; seasonal wetness; slope.	Severe: slow permeability for septic sewage; seasonal wetness; slope.	Very severe: seasonal wetness; slope.	Moderate: seasonal wetness.
Slight	Severe: compact substratum; seasonal water table; stoniness.	Moderate: slow permeability for septic sewage; seasonal wetness; stoniness.	Moderate: slow permeability for septic sewage; seasonal wetness; stoniness.	Very severe: seasonal wetness; dries slowly after rains; stoniness.	Very severe: seasonal wetness; stoniness.
Slight	Severe: compact substratum; seasonal water table; stoniness.	Severe: slow permeability for septic sewage; seasonal wetness; slope; stoniness.	Severe: slow permeability for septic sewage; seasonal wetness; stoniness.	Very severe: seasonal wetness; dries slowly after rains; stoniness.	Very severe: seasonal wetness; stoniness.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Podunk fine sandy loam.	Very severe: seasonal water table; flooding; hazard of surface and ground water pollution; rapid permeability in substratum.	Very severe: pervious when compacted; flooding; hazard of surface stream and ground water pollution.	Very severe: seasonal water table; flooding; hazard of surface stream and ground water pollution.	Very severe: seasonal water table; flooding.	Very severe: seasonal water table; flooding.
Ridgebury fine sandy loam, 0 to 3 percent slopes.	Very severe: high water table; moderately slow permeability in substratum.	Slight	Very severe: high water table.	Very severe: high water table; frost action.	Very severe: high water table; slow surface runoff; frost action.
Ridgebury very stony fine sandy loam, 0 to 3 percent slopes.	Very severe: high water table; moderately slow permeability in substratum.	Slight	Very severe: high water table.	Very severe: high water table; frost action.	Very severe: high water table; slow surface runoff; frost action.
Rock land	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.
Rumney fine sandy loam.	Very severe: high water table; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: rapid permeability; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: high water table; frequent flooding; hazard of surface stream and ground water pollution.	Very severe: high water table; frequent flooding.	Very severe: high water table; frequent flooding; excessive wetness.
Saugatuck loamy sand.	Very severe: high water table.	Very severe: pervious soil material; high water table.	Very severe: high water table; hazard of surface and ground water pollution.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.
Scantic silt loam	Very severe: high water table; slow to very slow permeability.	Slight	Severe: high water table; excessive wetness; poor trafficability; possible pollution of surface streams.	Very severe: high water table; excessive wetness; difficult to drain; frost action.	Severe: high water table; excessive wetness; frost action; low shear strength.
Scarboro sandy loam.	Very severe: high water table.	Very severe: pervious soil material; high water table.	Very severe: high water table; possible pollution of surface and ground water.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.
Sebago mucky peat	Very severe: thick organic material; high water table.	Very severe: thick organic material; high water table.	Very severe: thick organic material; high water table.	Very severe: thick organic material; high water table.	Very severe: thick organic material; high water table.
Suffield silt loam, 8 to 15 percent slopes, eroded.	Very severe: slow to very slow permeability in substratum.	Severe: slope	Moderate: slope; rapid runoff; hazard of surface water pollution.	Slight	Moderate: low shear strength; seepage.

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Moderate: seasonal water table; flooding.	Very severe: seasonal water table; flooding.	Severe: flooding; seasonal wetness; rapid permeability in substratum; surface stream and ground water pollution from septic effluent.	Very severe: flooding; seasonal wetness; rapid permeability in substratum; surface stream and ground water pollution from septic effluent.	Moderate: seasonal wetness; flooding.	Moderate: seasonal wetness; flooding.
Very severe: high water table; slow surface runoff.	Very severe: high water table; excessive wetness most of year; compact substratum.	Very severe: high water table; frost action.	Very severe: high water table; excessive wetness; frost action.	Very severe: excessive wetness; slow surface runoff.	Very severe: excessive wetness; slow surface runoff.
Very severe: high water table; slow surface runoff.	Very severe: high water table; excessive wetness most of year; compact substratum; stoniness.	Very severe: high water table; frost action.	Very severe: high water table; frost action.	Very severe: excessive wetness; slow surface runoff.	Very severe: excessive wetness; slow surface runoff.
Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.	Very severe: excessive rock outcrops and shallow to bedrock.
Very severe: high water table; frequent flooding.	Very severe: high water table; frequent flooding; excessive wetness.	Very severe: high water table; frequent flooding; excessive wetness; slow surface runoff.	Very severe: high water table; frequent flooding; excessive wetness; slow surface runoff.	Very severe: excessive wetness; slow surface runoff; frequent flooding.	Very severe: excessive wetness; slow surface runoff; frequent flooding.
Very severe: high water table; cuts are unstable.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness,
Severe: high water table; clay substratum; low shear strength.	Severe: high water table; clay substratum.	Very severe: high water table; excessive wetness; slow surface runoff; slow to very slow permeability.	Very severe: high water table; excessive wetness; slow surface runoff: slow to very slow permeability.	Very severe: excessive wetness; slow surface runoff.	Very severe: excessive wetness; slow surface runoff.
Very severe: high water table; cuts are unstable.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.	Very severe: high water table; excessive wetness.
Very severe: thick organic material; high water table.	Very severe: thick organic material; high water table.	Very severe: thick organic material; high water table; excess water.	Very severe: thick organic material; high water table; excess water.	Very severe: thick organic material; high water table; excess water.	Very severe: thick organic material; high water table; excess water.
Severe: low shear strength; sticky and plastic when wet.	Severe: sticky and plastic when wet; seepage in cuts.	Very severe: slow to very slow permeability; sticky and plastic when wet; slope.	Moderate: slope; sticky and plastic when wet.	Severe: sticky and plastic when wet; slope.	Moderate: slope; sticky and plastic when wet; dries slowly.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Suffield silt loam, 15 to 25 percent slopes, eroded.	Very severe: slow to very slow permeability in substratum; slope; seepage.	Very severe: slope.	Very severe: slope; erodibility; rapid runoff; hazard of surface water pollution.	Slight.	Severe: low shear strength; slope.
Suffield silt loam, 25 to 45 percent slopes, eroded.	Very severe: slow to very slow permeability in substratum; slope; seepage.	Very severe: slope.	Very severe: slope; erodibility; rapid runoff.	Slight.	Severe: low shear strength; slope.
Swanton fine sandy loam.	Very severe: high water table; slow to very slow permeability in substratum.	Slight.	Very severe: high water table; excess surface water.	Very severe: high water table; poor drainage outlets; differential settling in places.	Very severe: high water table; differential settling in places; frost action.
Tidal marsh. Not suitable for town and country use.					
Walpole fine sandy loam.	Very severe: high water table; rapid permeability; hazard of ground water pollution.	Very severe: rapid permeability; coarse textured throughout.	Very severe: high water table; rapid permeability.	Very severe: high water table; frost action; excessive wetness.	Very severe: high water table; frost action; excessive wetness.
Whately fine sandy loam.	Very severe: high water table; slow to very slow permeability in substratum.	Moderate: 1½ to 3 feet to clay substratum; high amount of organic material on surface.	Very severe: high water table; seepage; excess surface water; hazard of surface stream pollution.	Very severe: high water table; excessive wetness; frost action.	Very severe: high water table; excess surface water; frost action; low shear strength.
Whitman fine sandy loam.	Very severe: high water table; moderately slow to slow permeability; hazard of surface water pollution.	Slight.	Very severe: excess surface water most of year; hazard of surface water pollution.	Very severe: high water table; excessive wetness; frost action.	Very severe: high water table; excess surface water; slow surface runoff.
Windsor loamy sand, 0 to 8 percent slopes.	Moderate: rapid permeability; hazard of ground water pollution.	Very severe: pervious substratum; compacts poorly; piping; unstable.	Very severe: rapid permeability; hazard of ground water pollution.	Slight.	Slight.
Windsor loamy sand, 8 to 15 percent slopes.	Moderate: rapid permeability; hazard of ground water pollution.	Very severe: pervious substratum; slope.	Very severe: rapid permeability; hazard of ground water pollution; slope.	Slight.	Slight.

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Severe: low shear strength; sticky and plastic when wet; slope.	Very severe: sticky and plastic when wet; seepage in cuts; slope.	Very severe: slow to very slow permeability; sticky and plastic when wet; slope.	Very severe: slope; erodibility.	Very severe: sticky and plastic when wet; slope.	Very severe: slope: sticky and plastic when wet; dries slowly.
Severe: low shear strength; sticky and plastic when wet; slope.	Very severe: sticky and plastic when wet; seepage in cuts; slope.	Very severe: slow to very slow permeability; sticky and plastic when wet; slope.	Very severe: slope; erodibility.	Very severe: sticky and plastic when wet; slope.	Very severe: slope; erodibility; sticky and plastic when wet.
Very severe: high water table; cuts are unstable; differential settling in places.	Very severe: high water table; excess surface water; substratum sticky and plastic when wet.	Very severe: high water table; excess surface water; slow surface runoff; frost action.	Very severe: high water table; excess surface water; frost action.	Very severe: excess surface water; slow surface runoff; dries slowly.	Very severe: excess surface water; slow surface runoff; dries slowly; difficult to maintain desirable sod.
Severe: high water table; cut faces will slough.	Very severe: high water table; excessive wetness most of year.	Very severe: high water table; excessive wetness most of year.	Very severe: high water table; excessive wetness most of year.	Very severe: excessive wetness most of year.	Very severe: excessive wetness most of year.
Very severe: high water table; low shear strength in substratum.	Very severe: high water table; excess surface water; ponding in excavation.	Very severe: high water table; slow to very slow permeability; excess surface water.	Very severe: high water table; slow to very slow permeability; excess surface water.	Very severe: excess surface water; slow surface runoff.	Very severe: excess surface water; slow surface runoff
Very severe: high water table; excess surface water.	Very severe: high water table; excessive wetness; compact substratum; ponding in excavation.	Very severe: high water table; excess surface water; frost action.	Very severe: high water table; excess surface water; frost action.	Very severe: excess surface water; slow surface runoff.	Very severe: excess surface water; slow surface runoff.
Severe: unstable substratum; trench walls may slough.	Moderate: droughty; loose sandy surface.	Moderate: droughty; rapid permeability; ground water pollution from septic sewage effluent.	Moderate: droughty; rapid permeability; ground water pollution from septic sewage effluent.	Severe: droughty; difficult to maintain desirable sod; subject to wind blow.	Severe: droughty; difficult to maintain desirable sod; subject to wind blow.
Severe: unstable substratum; trench walls may slough.	Moderate: droughty; loose sandy surface.	Severe: droughty; rapid permeability; ground water pollution from septic sewage effluent; slope.	Severe: droughty; rapid permeability; ground water pollution from septic sewage effluent; slope.	Very severe: droughty; difficult to maintain desirable sod; slope; subject to wind blow.	Severe: droughty; difficult to maintain desirable sod; subject to wind blow.

TABLE 8.—*Limitations for specified uses*

Soil	Sewage disposal systems		Sanitary land fills	Earth-covered fallout shelters	Residences on public sewage systems
	Filter fields	Sewage lagoons			
Windsor loamy sand, 15 to 30 percent slopes.	Severe: rapid permeability; hazard of ground water pollution; slope.	Very severe: pervious substratum; slope.	Very severe: rapid permeability; hazard of ground water pollution.	Slight	Severe: slope; erodibility.
Woodbridge fine sandy loam, 0 to 8 percent slopes.	Severe: moderately slow permeability; seasonal water table.	Moderate: slope	Slight	Moderate: seasonal water table; seasonal wetness; seepage.	Moderate: seasonal water table; seepage.
Woodbridge fine sandy loam, 8 to 15 percent slopes.	Very severe: moderately slow permeability; seasonal water table; slope; seepage.	Severe: slope; seepage.	Moderate: slope; seepage.	Moderate: seasonal water table; seasonal wetness; seepage.	Moderate: seasonal water table; seepage.
Woodbridge very stony fine sandy loam, 0 to 8 percent slopes.	Severe: moderately slow permeability; seasonal water table.	Moderate: stoniness; slope.	Slight	Moderate: seasonal water table; seasonal wetness; seepage.	Moderate: seasonal water table; seepage.
Woodbridge very stony fine sandy loam, 8 to 15 percent slopes.	Very severe: moderately slow permeability; seasonal water table; slope; seepage.	Very severe: stoniness; slope; seepage.	Moderate: slope; seepage.	Moderate: seasonal water table; seasonal wetness; seepage.	Moderate: seasonal water table; seepage.

related to town and country planning—Continued

Pipelines and sewer lines (construction and maintenance)	Cemeteries	Developed sites for tents, trailers, and picnics	Sites for camps and cottages	Playing fields and shooting ranges	Golf fairways and landscaping
Severe: unstable substratum; sloughing of trench walls.	Severe: droughty; loose sandy surface; slope.	Severe: droughty; rapid permeability; ground water pollution from septic sewage effluent; slope.	Severe: droughty; rapid permeability; ground water pollution from septic sewage effluent; slope.	Very severe: droughty; difficult to maintain desirable sod; slope; subject to wind blow.	Very severe: droughty; difficult to maintain desirable sod; slope; subject to wind blow.
Slight	Severe: seasonal water table and wetness; compact substratum; ponding in excavation.	Moderate: seasonal wetness; moderately slow permeability.	Moderate: seasonal wetness; moderately slow permeability.	Moderate: seasonal wetness; moderately slow permeability; dries slowly after rains.	Moderate: seasonal wetness; moderately slow permeability; dries slowly after rains.
Slight	Severe: seasonal water table and wetness; compact substratum; ponding in excavation.	Severe: seasonal wetness; slope; seepage.	Severe: seasonal wetness; slope; seepage.	Severe: seasonal wetness; slope; seepage.	Moderate: seasonal wetness; moderately slow permeability; dries slowly after rains.
Slight	Severe: seasonal water table and wetness; compact substratum; stoniness; ponding in excavation.	Moderate: seasonal wetness; moderately slow permeability; stoniness.	Moderate: seasonal wetness; moderately slow permeability.	Severe: seasonal wetness; moderately slow permeability; dries slowly after rains; stoniness.	Very severe: stoniness.
Slight	Severe: seasonal water table and wetness; compact substratum; stoniness; ponding in excavation.	Severe: seasonal wetness; slope; seepage; stoniness.	Severe: seasonal wetness; slope; seepage.	Very severe: seasonal wetness; slope; seepage; stoniness.	Very severe: stoniness.

Formation, Morphology, and Classification of the Soils

In this section the major features of soil formation are discussed in terms of their effect on the development of the soils in Cumberland County. The current system of classification is briefly described, and the soil series in the survey area are placed in some classes of that system and in great soil groups of an older system. The soil series in the survey area, including a profile representative of each series, are described in the section "Descriptions of the Soils."

Formation of the Soils

Soil is formed by the interaction of parent material, plant and animal life, climate, relief, and time (*6*). These five major factors control or influence the soil-forming processes of additions, losses, transfers, and alterations and determine whether or not a horizon is faint or distinct. Normally the interaction of all the factors determines the kind of soil that forms in any given place, but the relative importance of each factor differs from place to place. In some places one or more of the factors may dominate in the formation of a soil and determine most of its properties.

Soil formation begins with physical weathering. Large pieces of rock are broken into smaller pieces by hydration, differential expansion, frost wedging, and other forces. Glaciers acting as physical weathering agents ground large quantities of rock material and redistributed this over some areas as heterogeneous material, and over other areas as selectively sorted materials (*4*). Most of the soils in Cumberland County formed in this glacial till or outwash material. Plants and animals aid in the soil-forming process by providing organic matter.

Weathering causes chemical and physical changes in soils. These changes are reflected in the horizons, or layers, that can be observed in most soils when a vertical cross section of the profile is exposed. The arrangement, color, thickness, consistence, structure, and other chemical and physical characteristics of these horizons are used as the basis for identifying and classifying soils.

Rock fragments and organic matter are chemically weathered by solution, oxidation, reduction, carbonation, and the action of weak acids, enzymes, and other known and unknown chemical processes. Through chemical processes, nitrogen, phosphorous, potassium, sulfur, calcium, magnesium, iron, molybdenum, zinc, manganese, and other elements are released in forms that can be utilized by plants.

Parent material

Parent material, the unconsolidated mass from which soils form, determines to a large extent the mineralogical and chemical composition of soils. It also affects the rate at which the soil-forming processes take place.

The soils of this survey area formed in glacial till, marine or lacustrine deposits, glacial outwash material, recent alluvium deposited by streams, and accumulations of organic material. Most of the soil material was left when the last ice sheet, or glacier, melted about 8,000 to 12,000 years ago (*3*, *7*). The alluvium is of relatively recent origin, and in some places new material is deposited from year to year.

The most extensive soils in this survey area are those that formed in glacial till. These soils vary in characteristics. The Hermon, Lyman, and Hollis soils are examples of soils that formed in glacial till. The Paxton, Peru, and Ridgebury soils are among the soils in the survey area that have a firm substratum. The Deerfield, Hinckley, Merrimac, and Windsor soils formed in glacial outwash deposits. They have a sandy solum and are commonly underlain by stratified sand and gravel. Soils of the Ondawa, Podunk, and Rumney series are on bottom lands along streams. These soils formed in recent alluvium deposited by the streams; they are medium textured and show only slight profile development. Sebago soils formed in organic material. Deposits of silt and clay that were laid down in small areas once covered by water for a relatively long period are lacustrine or marine deposits. Buxton, Scantic, and Suffield soils formed in these deposits.

Plant and animal life

Plants, animals, bacteria, fungi, and other forms of life that live on and in the soils are active in soil-forming processes. The plant cover is generally responsible for the amount of organic matter and nutrients in the soil and also for the color of the surface layer.

Earthworms, cicada, and burrowing animals help to keep the soil open and porous. Bacteria and fungi decompose the organic matter and release nutrients for plants. The native forests have influenced soil formation in this survey area more than other living organisms. Man, however, has affected soil development by clearing the forests, cultivating, adding fertilizer, mixing some soil horizons, and moving soil material from place to place.

Climate

Temperature, precipitation, and wind are climatic factors that have affected the formation of soils in this survey area. The climate influences the rate of weathering and the decomposition of rocks, minerals, and organic matter. It also influences the species and growth of plants and animals in and on the soil, which in turn affect the characteristics of the soils (*11*). Climatic data for this county are given in the section "Climate."

This county has a cool, maritime climate controlled by southerly winds that pass over the Atlantic Ocean. Seasonal changes in temperature are not as extreme as are typical for a continental type of climate. The mean annual air temperature is about 45° F., and the average precipitation during the growing season, May through September, ranges from 2.42 to 3.89 inches per month.

Relief

Relief, including direction of slope, affects soil formation through its influence on drainage, runoff, erosion, plant cover, and soil temperature. The topography of this county is nearly level to very steep, and the slopes range from 0 to 60 percent.

Generally the steeper the slope, the shallower the soil. This is because runoff is more rapid, and erosion is greater on the steep soils. Runoff is slow or ponded on many of the nearly level soils, and these soils are poorly drained or very poorly drained. South- or west-facing

slopes receive more direct sunshine and are warmer than north- or east-facing slopes. The permeability of the soil material and the length, steepness, and configuration of the slopes influence the kind of soil that is formed from place to place. Local differences in soils are most commonly caused by the differences in parent material and topography.

The effect of relief is reflected in the deep, gently rolling Belgrade, Paxton, Ridgebury, and Woodbridge soils on uplands in the western and central parts of the county. Sebago soils are an example of the deep, wet, organic soils in nearly level or depressional areas in the southeastern part of the county or in small concave areas throughout the county. Relief is also an important factor in the lack of soil profile development in some steep, rocky areas. Examples are Rock land and the shallow, very rocky Lyman soils that are in the western part of the county.

Time

Time is required for the formation of soils. The length of time that the parent material has been in place is commonly reflected in the degree that the soil profile has developed. The soils in this survey area have been forming since the retreat of the last glaciers, about 8,000 to 12,000 years ago (*3*).

The degree of profile development and the depth of the soil material generally indicate the maturity of a soil. Most soils on the flood plains are considered to be immature because they receive new sediment in periodic floods; well-defined horizons have not formed; soil structure is weak; and the differences in the color of the horizons are only slight. Soils of the Ondawa series are examples of soils that formed on flood plains; organic matter has accumulated on the surface, but the soil material has been changed only slightly by weathering. Some of the soils on glacial till, such as the Hermon and Peru soils, show a strong degree of weathering, but the depth of the weathering is only about 30 inches. These soils are considered to be more mature than the Ondawa soils.

Morphology of the Soils

A soil profile is a succession of layers, or horizons, that extend from the surface downward. Adjacent horizons in a profile differ in one or more properties. These differences show the effect that the soil-forming processes had on the development of horizons.

Most soil profiles have three major horizons, called the A, B, and C horizons (*2,13*). The A horizon is the surface layer. It is the layer of maximum organic-matter content, called the A1 horizon, or the layer of maximum leaching or eluviation of clay, iron, and organic matter called the A2 horizon. The A2 horizon in some soils in this survey is whitish, indicating intensive leaching.

The B horizon is generally below the A horizon and is commonly called the subsoil. It generally is a horizon of maximum accumulation or illuviation of clay, iron, aluminum, organic matter, or other compounds that have been leached from the A horizon; in some soils part of the B horizon is formed by alteration in place instead of from illuviation. The alteration may be due to oxidation and reduction of iron or the weathering of clay minerals. The B horizon has about the same consistence as the A horizon, and is more friable than the C horizon except in sandy and gravelly soils. The dominant structure is granular except in the silty and clayey soils. The B horizon is darker than the C horizon in about 30% of the soils, has the same value or lightness in about 60%, and is lighter in about 10%.

The C horizon consists of material that has been only slightly altered by the processes of soil formation, but it may have been slightly modified by weathering.

Several processes were involved in the formation of soil horizons in the soils of this county. These processes include the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation of soil structure, and some translocation and loss of clay minerals, aluminum, silica, and iron. These processes are continually taking place, generally at the same time throughout the profile. Time for these processes is measured in thousands of years.

The accumulation of organic matter in the upper part of the profile results in a dark-colored surface layer and in the formation of an A1 horizon. The organic-matter content in the uneroded soils generally is more than 3 percent.

The well drained and moderately well drained soils have a dark reddish-brown to olive-brown subsoil. The reddish colors are caused mainly by thin coats of iron oxides and organic matter on sand and silt grains; in this county no reddish parent material has been found from which the soils could have inherited the reddish colors. Some of the soils have a weak to moderate, subangular blocky structure. The subsoil contains the same amount or only slightly more clay than is in the surface horizon.

Most of the moderately well drained and the somewhat poorly drained soils have a fragipan in the subsoil. The fragipan is very firm and brittle when moist and is hard when dry. The soil particles are so tightly packed that the bulk density is high and the pore space is low. The genesis of these horizons is not fully understood, but studies show that some swelling and shrinking takes place in alternating wet and dry periods. These may account for the tight packing of soil particles and also for a gross polygonal pattern of cracks in the fragipan. Clay, silica, and oxides of aluminum are the most likely cementing agents causing brittleness and hardness (*5*).

Classification of the Soils

Soils are classified so that their significant characteristics can be more easily remembered. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. Through classification and the use of soil maps, we can apply knowledge of soils to specific fields and other tracts of land.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and was later revised (*10*). The system currently used was adopted for general use by the National Cooperative Soil Survey in 1965 and is under continual study. Readers interested in developments of this system should refer to the latest literature available

(*9,14*). In table 9 the soil series of Cumberland County are placed in some categories of the current system and in the great soil groups of the older system.

The current system of classification has six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. In this system soil properties that are observable and measurable are used as a basis for classification. The properties are chosen so that the soils of similar genesis, or method of formation, are grouped together. Except for soil series, the classes that make up the current system are briefly defined in the following paragraphs. Soil series is defined in the section "How This Survey Was Made."

ORDER. Ten soil orders are recognized in this system. They are Alfisols, Aridisols, Entisols, Histosols, Inceptisols, Mollisols, Oxisols, Spodosols, Utisols, and Vertisols. The properties used to differentiate the soil orders are those that tend to give broad climatic groupings of soils. The exceptions are the Entisols, Histosols, and, to some extent, the Inceptisols, which occur in many climates. Four of the soil orders are represented in this survey area. They are Entisols, Histosols, Inceptisols, and Spodosols.

Entisols are soils in which horizons have not started to develop. They are on young, or recent, land surfaces and, in Cumberland County, are coarser than loamy fine sand.

Histosols are soils that are dominantly organic and commonly called bogs or peat and muck. They are comprised of layers of decomposed herbaceous and woody organic deposits.

Inceptisols are mineral soils in which horizons have definitely started to develop. They are generally on young, but not recent, land surfaces.

Spodosols are soils that have, at or near the surface, a horizon in which iron and aluminum oxides have accumulated, as well as some organic carbon, but little or no additional clay.

TABLE 9.—*Soil series of Cumberland County classified according to higher categories*

Series	Current classification system			Great soil group of 1938 system
	Family	Subgroup	Order	
Au Gres	Sandy, mixed, frigid	Entic Haplaquods	Spodosols	Podzols.
Belgrade	Coarse-silty, mixed, mesic	Aquentic Haplorthods	Spodosols	Brown Podzolic soils.
Biddeford	Fine, illitic, nonacid, mesic	Histic Humaquepts	Inceptisols	Humic Gley soils.
Buxton	Fine, mixed, mesic	Aquic Dystric Eutrochrepts	Inceptisols	Brown Podzolic soils.
Canaan	Loamy, skeletal, mixed, frigid	Lithic Haplorthods	Spodosols	Podzols.
Deerfield	Sandy, mixed, mesic	Aquentic Haplorthods	Spodosols	Brown Podzolic soils.
Elmwood	Coarse-loamy over clayey, mixed, mesic.	Aquentic Haplorthods	Spodosols	Brown Podzolic soils.
Hartland	Coarse-silty, mixed, mesic	Entic Haplorthods	Spodosols	Brown Podzolic soils.
Hermon	Sandy skeletal, mixed, frigid	Typic Haplorthods	Spodosols	Podzols.
Hinckley	Sandy skeletal, mixed, mesic	Entic Haplorthods	Spodosols	Brown Podzolic soils.
Hollis	Loamy, mixed, mesic	Entic Lithic Haplorthods	Spodosols	Brown Podzolic soils.
Limerick	Coarse-silty, mixed, nonacid, mesic	Typic Fluvaquents	Entisols	Alluvial Low-Humic Gley soils.
Lyman	Loamy, mixed, frigid	Lithic Haplorthods	Spodosols	Podzols.
Melrose	Coarse-loamy over clayey, mixed, mesic.	Entic Haplorthods	Spodosols	Brown Podzolic soils.
Merrimac	Sandy, mixed, mesic	Entic Haplorthods	Spodosols	Brown Podzolic soils.
Ondawa	Coarse-loamy, mixed, mesic	Fluventic Dystrochrepts	Inceptisols	Alluvial soils.
Paxton	Coarse-loamy, mixed, mesic	Entic Fragiorthods	Spodosols	Brown Podzolic soils.
Peru	Coarse-loamy, mixed, frigid	Aquic Fragiorthods	Spodosols	Podzols.
Podunk	Coarse-loamy, mixed, mesic	Fluvaquentic Dystrochrepts	Inceptisols	Alluvial soils.
Ridgebury	Coarse-loamy, mixed, mesic	Aeric Fragiaquepts	Inceptisols	Low-Humic Gley soils.
Rumney	Coarse-loamy, mixed, acid, mesic	Aeric Fluvaquents	Entisols	Alluvial soils.
Saco	Coarse-silty, mixed, nonacid, mesic	Fluvaquentic Humaquepts	Inceptisols	Alluvial Humic Gley soils.
Saugatuck	Sandy, mixed, frigid, ortstein	Aeric Haplaquods	Spodosols	Ground-water Podzols.
Scantic	Fine, illitic, nonacid, mesic	Typic Haplaquepts	Inceptisols	Low-Humic Gley soils.
Scarboro	Mixed, mesic	Mollic Psammaquents	Entisols	Humic Gley soils.
Sebago	Dysic	Fibric Borohemist	Histosols	Peat and Muck.
Suffield	Coarse-silty over clayey, mixed, mesic	Entic Haplorthods	Spodosols	Brown Podzolic soi
Swanton	Coarse-loamy over clayey, mixed, nonacid, mesic.	Aeric Haplaquepts	Inceptisols	Low-Humic Gley soils.
Walpole	Sandy, mixed, mesic	Aeric Haplaquepts	Inceptisols	Low-Humic Gley soils.
Whately	Coarse-loamy over clayey, mixed, nonacid, mesic.	Mollic Haplaquepts	Inceptisols	Humic Gley soils.
Whitman	Coarse-loamy, mixed, mesic	Typic Fragiaquepts	Inceptisols	Humic Gley soils.
Windsor	Sandy, mixed, mesic	Entic Haplorthods	Spodosols	Brown Podzolic soils.
Woodbridge	Coarse-loamy, mixed, mesic	Aquentic Fragiorthods	Spodosols	Brown Podzolic soils.

SUBORDER. Each order is divided into suborders, primarily on the basis of those soil characteristics that indicate classes that have the greatest genetic similarities. The suborder narrows the broad climatic range permitted in the orders. The soil properties used to separate suborders mainly reflect either the presence or absence of waterlogging or soil differences resulting from the climate or vegetation.

GREAT GROUP. Each suborder is divided into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons considered are those in which clay, iron, or humus has accumulated, or those that have pans that restrict root growth or the movement of water. Some of the features considered are the self-mulching properties of clay, soil temperature, and major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium). The great group is not shown in table 9, because it is the last word in the name of the subgroup.

SUBGROUP. Each great group is divided into subgroups. One represents the central (typic) concept of the group, and the other subgroups, called intergrades, are made up of soils that have properties mostly of one great group, but also one or more properties of another great group, suborder, or order. Subgroups are also used in those instances where soil properties intergrade outside of the range of any other great group, suborder, or order.

FAMILIES. Families are established within a subgroup, primarily on the basis of properties important to the growth of plants or the behavior of soils when used for engineering. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence. Table 9 gives the family of each of the series represented in this county, though some family designations will be changed as more information is obtained.

Climate[6]

The climate in Cumberland County is characterized by cool to moderately warm summers, fairly cold winters, and generally ample rainfall. The Atlantic Ocean is a moderating influence especially along the coast and, less frequently, even in the most inland portion. The effect of the Atlantic Ocean on inland areas varies seasonally as well as with distance. The marine influence is most frequent during the warmer months when southerly winds or sea breezes are common. In winter, northerly or northwesterly winds are more predominant, and the ocean has the least influence on weather.

The climate is more continental than maritime in most of the county. Exceptions are the coastal islands and other coastal areas. The temperature varies greatly from winter to summer and from day to night, and day-to-day variations are also common. Cumberland County is near the favored paths of weather systems that alternately bring in warmer air from southerly directions and colder air from northerly directions.

Elevation and local topography also affect weather and climate. Temperatures generally are lower and precipitation greater at higher elevations. Most elevations are less than 400 feet above sea level, but many hills rise above 500 feet. The highest elevation is around 1,800 feet. The principal ridge of the White Mountains is northwest of the county and serves as a climatic barrier that, to some extent, is a factor in the climate of the county.

Coastal islands are numerous. The many inland lakes and ponds do not moderate the weather of nearby shore areas as significantly as do ocean waters. Once the lakes are frozen over, their influence is negligible.

Local variations in climate result from differences in elevation and topography, from differences in soil types, and from nearness to inland ponds and lakes. The terrain in Cumberland County ranges from relatively flat areas, including some marshes, to rolling or hilly areas. These factors primarily affect the minimum temperatures and the occurrence dates of spring and fall freezes. A low basin that has peaty soil, for example, may be notorious as a "frost pocket" and have a much shorter period free of freezing temperatures than a sandy loam slope nearby.

Table 10 shows temperature and precipitation data. The temperature data do not include the extreme high and low temperatures of record, but do include a probability of occurrence of specified temperatures. These temperatures can be expected to occur 4 days, 2 years in 10. These probable temperatures can be used to estimate the extremes that can be expected.

Temperature.—The mean of the coldest month, January, ranges from about 22° F. along the coast, 18 to 20° inland, and slightly higher in the larger urban centers. The mean monthly temperature is about 55° or higher for each of the five warmer months, May through September. The cool Atlantic waters hold the May average down to near 53° along the coast. The May mean reaches a full 55° only in the most inland areas. The warmest month, July, generally averages 68 to 70°. The highest temperatures occur inland or in the larger urban centers. The year to year occurrences of temperatures that reach 90° vary from none at all in some years, to 8 to 10 along the coast, and up to 16 or more inland in the warmest summers. An average summer reaches 90° for only 2 to 6 days along the coast and for up to 10 days inland. Nights are almost always cool, even in the warmest summers.

Table 11 shows, by months, the average frequency of specified temperatures, the number of heating degree-days, and the number of growing degree-days. These are computed by each day recording the significant departure from a selected temperature base and summarizing these departures for the month and for the year. The temperature base selected, and the departures to be recorded, depend upon the purpose. A base of 65° F. is used for heating degree-days, as this is the lowest value for which no heat is required for homes.

Data on growing degree-days are useful for planning the dates that crops are planted and harvested. Growing degree-days accumulate when the mean temperature is higher than the lowest value at which plants continue to grow. They are calculated by subtracting the base temperature from the actual mean for the day. No negative values are used. The accumulation is zero when the actual mean is colder than the base temperature. The data in these tables are calculated from two standard bases: 40° for cool-weather crops, such as grasses, potatoes, and peas; and 50° for warm-weather crops, such as corn. A day on which the mean temperature is 60° accounts for 20

[6] By ROBERT E. LAUTZENHEISER, state climatologist, National Weather Service, U.S. Department of Commerce.

TABLE 10.—*Temperature and precipitation data*

BRIDGTON, CUMBERLAND COUNTY; ELEVATION 600 FEET

Month	Temperature					Precipitation						
	Average daily			2 years in 10 will have at least 4 days with—		Average total	1 year in 10 will have—		Average snow fall	Days with—		
	Maximum	Minimum	Mean	Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—		Snowfall 1 inch or more	Snow cover 1 inch or more	Precipitation 0.10 inch or more
	°F.	°F.	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*			
January	30.7	9.4	20.1	44	−13	3.63	1.8	6.7	21.4	7	29	8
February	32.8	10.2	21.5	46	−10	3.05	2.0	4.4	19.2	6	28	6
March	41.4	20.1	30.8	57	0	3.77	1.4	6.1	16.1	5	27	7
April	54.5	31.5	43.0	74	20	3.65	1.6	6.5	4.9	1	7	7
May	67.5	41.7	54.6	84	30	3.66	1.4	8.2	.4	(1)	(1)	8
June	76.6	51.6	64.1	91	40	3.71	1.3	7.0	0	0	0	8
July	81.6	57.0	69.3	91	48	3.66	1.3	6.0	0	0	0	7
August	79.9	55.3	67.6	93	45	3.50	1.3	5.4	0	0	0	6
September	71.3	47.8	59.6	85	35	3.89	1.6	7.1	0	0	0	6
October	60.5	37.6	49.1	76	24	3.55	.8	6.6	.4	(1)	(1)	6
November	45.8	28.1	37.0	61	15	4.78	1.9	7.9	4.9	2	3	8
December	33.1	14.1	23.6	48	−5	3.82	1.7	6.2	14.5	4	20	7
Year	56.3	33.7	45.0	[2] 95	[3] −19	44.67	34.2	57.5	81.8	25	114	84
PORTLAND (WBAS), CUMBERLAND COUNTY; ELEVATION 43 FEET												
January	31.8	11.7	21.8	46	−10	4.37	1.6	5.6	19.0	5	23	7
February	33.5	12.1	22.8	46	−9	3.80	1.7	5.7	19.2	5	23	6
March	40.7	22.0	31.4	54	5	4.34	1.5	8.4	14.5	3	16	7
April	52.5	32.4	42.5	69	22	3.73	1.8	5.3	2.6	1	1	7
May	64.2	41.7	53.0	80	30	3.41	1.5	6.7	.3	(1)	0	7
June	73.1	51.1	62.1	87	41	3.18	1.2	5.7	0	0	0	6
July	79.5	56.7	68.1	89	48	2.86	1.0	5.1	0	0	0	5
August	78.4	55.2	66.8	91	44	2.42	.7	4.6	0	0	0	5
September	70.2	47.2	58.7	83	33	3.52	1.0	6.5	(4)	0	0	5
October	59.8	37.4	48.6	77	26	3.20	1.6	6.6	.3	(1)	0	6
November	47.6	28.6	38.1	61	17	4.17	2.6	6.5	3.0	1	2	8
December	35.3	16.3	25.8	51	−6	3.85	1.1	5.7	13.2	3	15	6
Year	55.6	34.4	45.0	[2] 94	[3] −16	42.85	29.3	55.0	72.1	18	80	75

[1] Less than 0.5 day. [2] Average annual maximum. [3] Average annual minimum. [4] Trace.

growing degree-days for a cool-weather crop but only 10 for warm-weather crops.

A substantial number of growing degree-days in a given month does not necessarily indicate that crops may be safely planted. The possibility of a damaging freeze still exists. Table 12 gives the probability of freezing temperatures after specified dates in spring and before specified dates in fall. For example, from table 12 it is seen that at the Portland City Airport there are still eight chances in ten for a 32° freeze after May 4 and that by May 26 the chance of such a freeze is reduced to one in ten, or 10 percent. The date for a 50 percent chance is May 13. A 32° freeze in the standard instrument shelter is generally seriously damaging to nearby sensitive plants. Hardier plants withstand lower temperatures. For use in planning the management of plants that have varying degrees of hardiness, these tables also contain the probabilities for various harder freezes, down to 16°.

The average length of the 32° freeze-free season ranges from about 130 to 140 days inland to 160 to 170 days along the immediate coast and in the more protected urban areas. Greater local variations exist, especially in low "frost pockets." In low boggy areas frost is a threat very late in spring and very early in fall. Frosts occur even in summer at such places in exceptional years.

Precipitation.—The average annual precipitation ranges from about 42 to 46 inches. Low sheltered areas may receive a little less and the highest elevations somewhat more. Precipitation includes the water equivalent of snowfall. The seasonal distribution is fairly even, but it is generally drier in summer, June through August, especially near the coast. But even there the summer rainfall is 20 percent or more of the annual total. The amount of summer precipitation is relatively large, as compared to most of the nation. This provides an abundant water supply for home and industry, as well as irrigation water for crops during the generally short, but fairly common, dry spells in summer.

Snowfall varies considerably from year to year and from place to place in the same year. The average seasonal total ranges from nearly 70 inches in some coastal areas to 80 to 85 inches or more in the inland part of the

TABLE 11.—*Frequencies of selected temperatures and average of heating degree-days and growing degree-days*

BRIDGTON, CUMBERLAND COUNTY

Month	Mean number of days with—				Accumulated heat units		
	Maximum temperature of—		Minimum temperature of—		Heating degree-days	Growing degree-days	
	90° F. or higher	32° F. or lower	32° F. or lower	0° F. or lower	Base 65° F.	Base 40° F.	Base 50° F.
January	0	18	30	9	1,385	0	0
February	0	12	28	7	1,222	0	0
March	0	5	28	2	1,054	35	0
April	0	0	18	0	654	147	25
May	(1)	0	4	0	324	459	175
June	2	0	0	0	85	730	430
July	4	0	0	0	15	915	605
August	3	0	0	0	45	862	552
September	(1)	0	1	0	183	595	300
October	0	0	9	0	517	292	70
November	0	2	20	(1)	834	55	0
December	0	14	29	5	1,277	0	0
Year	9	51	167	23	7,595	4,090	2,157
PORTLAND (WBAS), CUMBERLAND COUNTY							
January	0	16	30	6	1,339	0	0
February	0	12	27	5	1,182	0	0
March	0	5	27	1	1,042	32	0
April	0	(1)	15	0	675	126	14
May	(1)	0	3	0	372	410	126
June	1	0	0	0	111	669	370
July	2	0	0	0	12	878	568
August	2	0	0	0	53	838	528
September	(1)	0	2	0	195	567	270
October	0	0	9	0	508	280	65
November	0	1	20	0	807	62	0
December	0	12	29	3	1,215	0	0
Year	6	45	162	15	7,511	3,862	1,941

[1] Less than 0.5 day.

county. A continuous snow cover of one inch or more that lasts for a month or more is not expected every winter in the coastal section but is expected inland. The average duration of the longest snow cover ranges from 1½ months near the coast to 3 months or more farther inland. Near the coast this continuous cover begins, on the average, by mid-January and ends early in March. The more inland areas are covered from late December to near the end of March. The average seasonal maximum depth of snow on the ground at any one time ranges from 15 to 20 inches near the coast to 2 to 3 feet or more inland. The average date of the maximum snow depth varies from the second week of February near the coast to the fourth week inland. The dates of maximum depth range widely from season to season. Winters that have the least snow accumulations have maximum depths of only 5 to 10 inches. The snowiest winters have depths ranging from approximately 30 inches near the coast to over 60 inches farthest inland.

Storms.—Thunderstorms are the principal cause of damage to crops by wind and hail. The frequency varies markedly from year to year, but the average number of days that have thunderstorms is about 15 to 20 near the coast to 20 or more inland. The frequency of thunderstorms is slight in winter and greatest from May through August. Most of these storms do little or no damage but instead bring beneficial rain. The heavy rains that accompany the more severe thunderstorms sometimes cause soil erosion, plant injury, and total damage greater than that from associated lightning. Spring and summer thunderstorms are sometimes accompanied by hail. Hailstones, which fall about once or twice a year at any given location, are seldom large enough or numerous enough to cause extensive damage. In exceptional cases, hail may cause heavy local damage to plants and property. Damaging wind or heavy rain caused by hurricanes affect this area an average of once in 10 or more years. Strong winds and heavy rains from coastal storms, or "northeasters," are more frequent, but generally do not cause heavy damage inland. Coastal installations, boats, and fishing equipment are more vulnerable to these storms. Tornadoes have not been a serious problem. For any given point, the chance of a tornado striking in any year is estimated to be less than one in a thousand, and is least likely along the coast.

TABLE 12.—*Probabilities of dates of beginning and ending of freeze free period (growing season) for several levels of freeze severity*

Probability	Dates for given probability and temperature level				
	32° F. or lower	28° F. or lower	24° F. or lower	20° F. or lower	16° F. or lower
BRIDGTON (North Bridgton)					
Spring:					
1 year in 10 later than	May 30	May 17	May 2	April 19	April 9
2 years in 10 later than	May 26	May 13	April 28	April 15	April 5
5 years in 10 later than	May 17	May 4	April 19	April 6	March 27
8 years in 10 later than	May 8	April 25	April 10	March 28	March 18
Fall:					
1 year in 10 earlier than	September 16	September 23	October 10	October 24	November 5
2 years in 10 earlier than	September 20	September 27	October 14	October 28	November 9
5 years in 10 earlier than	September 29	October 6	October 23	November 6	November 18
8 years in 10 earlier than	October 8	October 15	November 1	November 15	November 27
PORTLAND (City Airport)					
Spring:					
1 year in 10 later than	May 26	May 13	April 25	April 12	April 5
2 years in 10 later than	May 22	May 9	April 21	April 8	April 1
5 years in 10 later than	May 13	April 30	April 12	March 30	March 23
8 years in 10 later than	May 4	April 21	April 3	March 21	March 14
Fall:					
1 year in 10 earlier than	September 12	September 23	October 10	October 27	November 12
2 years in 10 earlier than	September 16	September 27	October 14	October 31	November 16
5 years in 10 earlier than	September 25	October 6	October 23	November 9	November 25
8 years in 10 earlier than	October 4	October 15	November 1	November 18	December 4

Farm Statistics

Dairy farming and poultry raising are the main farming enterprises and are primarily in the eastern part of the county. However, livestock, fruit and nut, and vegetable farming are also important.

Farms in the county have decreased in number but have increased in size. According to the U.S. Census of Agriculture for 1964, Cumberland County had 879 farms totaling 116,086 acres, or 20.6 percent of the total acreage in the county. The average size of farms was 132 acres.

In 1964, 510 farms raised some livestock and 230 farms produced poultry or poultry products. Tree fruits were produced on 87 farms, and of these, 85 produced apples. The total cropland harvested was 30,083 acres on 718 farms.

In 1964, 629 farms were less than 100 acres in size, 65 were between 100 and 199 acres, 22 were between 200 and 499 acres and 2 were between 500 and 999 acres.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity. The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Base saturation. The degree to which material that has base-exchange properties is saturated with exchangeable cations other than hydrogen, expressed as a percentage of the cation-exchange capacity.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Diversion, or diversion terrace. A ridge of earth, generally a terrace, that is built to divert runoff from its natural course and, thus, to protect areas downslope from the effects of such runoff.

Drainage, natural. Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Imperfectly or somewhat poorly drained soils are wet for significant periods but not all the time, and in Podzolic soils commonly have mottling below 6 to 16 inches, in the lower A horizon and in the B and C horizons.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors, such as light, moisture, temperature, and the physical condition of the soil, are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has been allowed to drain away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Flood plain. Nearly level land, consisting of stream sediment, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling cause by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Humus. The well-decomposed, more or less stable part of the organic matter in mineral soils.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineralogical, and biological properties of the various horizons, and their thickness and arrangement in the soil profile.

Mottled. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension;

and *coarse*, more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Parent material. The disintegrated and partly weathered rock from which a soil forms.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality of a soil horizon that enables water or air to move through it. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. As a soil separate, individual rock or mineral fragments that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but sand can be of any mineral composition. As a textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a textural class, a soil that is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles, less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *Very coarse sand* (2.0 to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter). The separates recognized by the International Society of Soil Science are as follows: I (2.0 to 0.2 millimeter); II (0.2 to 0.02 millimeter); III (0.02 to 0.002 millimeter); IV (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plants and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular, Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. Technically, the part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surplus runoff so that it may soak into the soil or flow slowly to a prepared outlet without harm. Terraces in fields are generally built so they can be farmed. Terraces intended mainly for drainage have a deep channel that is maintained in permanent sod.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MAINE AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

CUMBERLAND COUNTY, MAINE

Scale 1:190080

1 0 1 2 3 4 Miles

N

SOIL ASSOCIATIONS*

1 Hermon-Peru-Paxton association: Deep, somewhat excessively drained to moderately well drained, nearly level to very steep, dominantly moderately coarse textured soils

2 Windsor-Hinckley-Deerfield association: Deep, excessively drained to moderately well drained, nearly level to steep, coarse-textured soils

3 Suffield-Buxton-Hollis association: Deep, well-drained to somewhat poorly drained, gently sloping to steep, medium-textured soils and ridges of shallow, somewhat excessively drained, moderately coarse textured soils

4 Scantic-Buxton-Windsor association: Deep, poorly drained to moderately well drained, level to moderately sloping, medium-textured soils and deep, excessively drained, nearly level to steep, coarse-textured soils

5 Paxton-Woodbridge-Hollis association: Deep, well drained and moderately well drained, nearly level to strongly sloping, moderately coarse textured soils and shallow, somewhat excessively drained, moderately coarse textured soils

6 Hollis-Windsor-Au Gres association: Shallow, somewhat excessively drained, gently sloping to steep, moderately coarse textured soils and deep, excessively drained and somewhat poorly drained, level to steep, coarse-textured soils

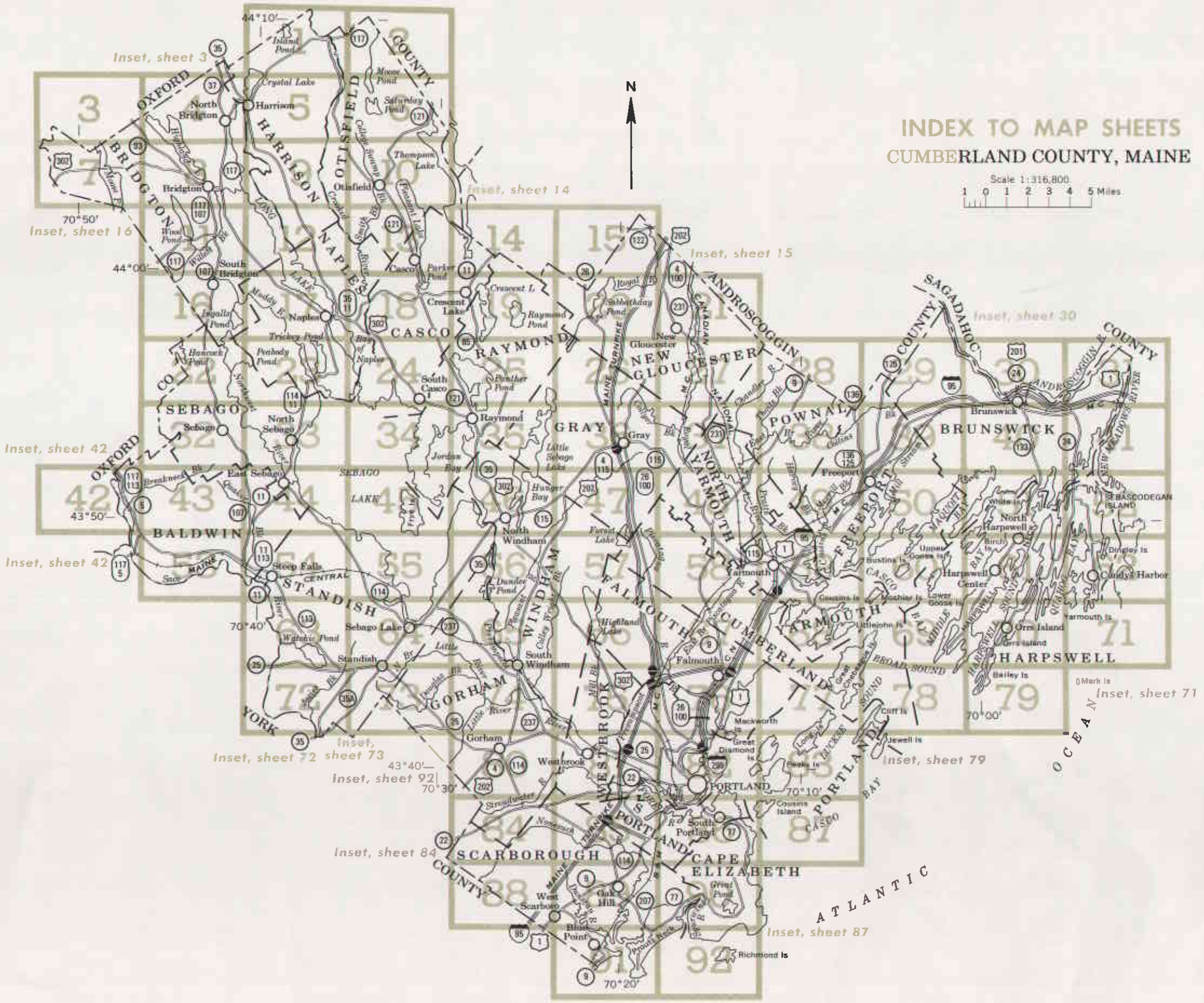
*Texture named in soil association is that of surface layer.

Compiled 1972

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

INDEX TO MAP SHEETS
CUMBERLAND COUNTY, MAINE

Scale 1:316,800
1 0 1 2 3 4 5 Miles



SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, or E, shows the slope. Most symbols without a slope letter are those of nearly level soils, but some are for land types that have a considerable range of slope. A final number, 2, in the symbol shows that the soil is eroded.

SYMBOL	NAME
Au	Au Gres loamy sand
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes
BgC2	Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded
Bo	Biddeford silt loam
BuB	Buxton silt loam, 3 to 8 percent slopes
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded
CaB	Canaan sandy loam, 3 to 8 percent slopes
CaC	Canaan sandy loam, 8 to 15 percent slopes
CeB	Canaan very rocky sandy loam, 3 to 8 percent slopes
CeC	Canaan very rocky sandy loam, 8 to 20 percent slopes
CeE	Canaan very rocky sandy loam, 20 to 60 percent slopes
Ck	Coastal beaches
Cu	Cut and fill land
DeA	Deerfield loamy sand, 0 to 3 percent slopes
DeB	Deerfield loamy sand, 3 to 8 percent slopes
Du	Dune land
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes
Gp	Gravel pits
HfB	Hartland very fine sandy loam, 3 to 8 percent slopes
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded
HgB	Hermon sandy loam, 3 to 8 percent slopes
HgC	Hermon sandy loam, 8 to 15 percent slopes
HgD	Hermon sandy loam, 15 to 25 percent slopes
HhB	Hermon very stony sandy loam, 3 to 8 percent slopes
HhC	Hermon very stony sandy loam, 8 to 15 percent slopes
HhD	Hermon very stony sandy loam, 15 to 30 percent slopes
HkC	Hermon extremely stony sandy loam, 8 to 20 percent slopes
HkE	Hermon extremely stony sandy loam, 20 to 60 percent slopes
HlB	Hinckley gravelly sandy loam, 3 to 8 percent slopes
HlC	Hinckley gravelly sandy loam, 8 to 15 percent slopes
HlD	Hinckley gravelly sandy loam, 15 to 25 percent slopes
HnB	Hinckley-Suffield complex, 3 to 8 percent slopes
HnC	Hinckley-Suffield complex, 8 to 15 percent slopes
HnD	Hinckley-Suffield complex, 15 to 25 percent slopes
HrB	Hollis fine sandy loam, 3 to 8 percent slopes
HrC	Hollis fine sandy loam, 8 to 15 percent slopes
HrD	Hollis fine sandy loam, 15 to 25 percent slopes
HsB	Hollis very rocky fine sandy loam, 3 to 8 percent slopes
HsC	Hollis very rocky fine sandy loam, 8 to 20 percent slopes
HsE	Hollis very rocky fine sandy loam, 20 to 35 percent slopes
Ls	Limerick-Saco silt loams
LyB	Lyman fine sandy loam, 3 to 8 percent slopes
LyC	Lyman fine sandy loam, 8 to 15 percent slopes
LzB	Lyman very rocky fine sandy loam, 3 to 8 percent slopes
LzC	Lyman very rocky fine sandy loam, 8 to 20 percent slopes
LzE	Lyman very rocky fine sandy loam, 20 to 45 percent slopes
Md	Made land
MeC	Melrose fine sandy loam, 8 to 15 percent slopes
MkB	Merrimac fine sandy loam, 3 to 8 percent slopes
MkC	Merrimac fine sandy loam, 8 to 15 percent slopes
On	Ondawa fine sandy loam
PbB	Paxton fine sandy loam, 3 to 8 percent slopes
PbC	Paxton fine sandy loam, 8 to 15 percent slopes
PbD	Paxton fine sandy loam, 15 to 25 percent slopes
PfB	Paxton very stony fine sandy loam, 3 to 8 percent slopes
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes
PfD	Paxton very stony fine sandy loam, 15 to 25 percent slopes
PkB	Peru fine sandy loam, 0 to 8 percent slopes
PkC	Peru fine sandy loam, 8 to 15 percent slopes
PlB	Peru very stony fine sandy loam, 0 to 8 percent slopes
PlC	Peru very stony fine sandy loam, 8 to 15 percent slopes
Py	Podunk fine sandy loam
RbA	Ridgebury fine sandy loam, 0 to 3 percent slopes
RgA	Ridgebury very stony fine sandy loam, 0 to 3 percent slopes
Ro	Rock land
Ru	Rumney fine sandy loam
Sd	Saugatuck loamy sand
Sn	Scantic silt loam
So	Scarboro sandy loam
Sp	Sebago mucky peat
SuC2	Suffield silt loam, 8 to 15 percent slopes, eroded
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded
Sz	Swanton fine sandy loam
Tm	Tidal marsh
Wa	Walpole fine sandy loam
Wg	Whately fine sandy loam
Wh	Whitman fine sandy loam
WmB	Windsor loamy sand, 0 to 8 percent slopes
WmC	Windsor loamy sand, 8 to 15 percent slopes
WmD	Windsor loamy sand, 15 to 30 percent slopes
WrB	Woodbridge fine sandy loam, 0 to 8 percent slopes
WrC	Woodbridge fine sandy loam, 8 to 15 percent slopes
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes
WsC	Woodbridge very stony fine sandy loam, 8 to 15 percent slopes

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Divided
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State or county

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail
- Railroad
- Ferry (FY)
- Grade
- R. R. over
- R. R. under

Buildings
- School
- Church

Mine and quarry

Gravel pit

Power line

Breakwater, Jetty

Airway beacon

Cemetery

Dams

Levee

Tanks

Lighthouse

Forest fire or lookout station

Fort

Located object

BOUNDARIES

- National or state
- County
- Minor civil division
- Reservation
- Limit of soil survey
- Small park, cemetery, airport
- Land survey division corners

DRAINAGE

Streams, double-line
- Perennial
- Intermittent

Streams, single-line
- Perennial

Intermittent
- Crossable with tillage implements
- Not crossable with tillage implements
- Unclassified

Canals and ditches

Lakes and ponds
- Perennial (water, w)
- Intermittent (int)

Spring

Marsh or swamp

Wet spot

Drainage end or alluvial fan

RELIEF

Escarpments
- Bedrock
- Other

Short steep slope

Prominent peak

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stoniness: Stony, Very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Top soil removed
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully

1

CUMBERLAND COUNTY, MAINE NO. 1

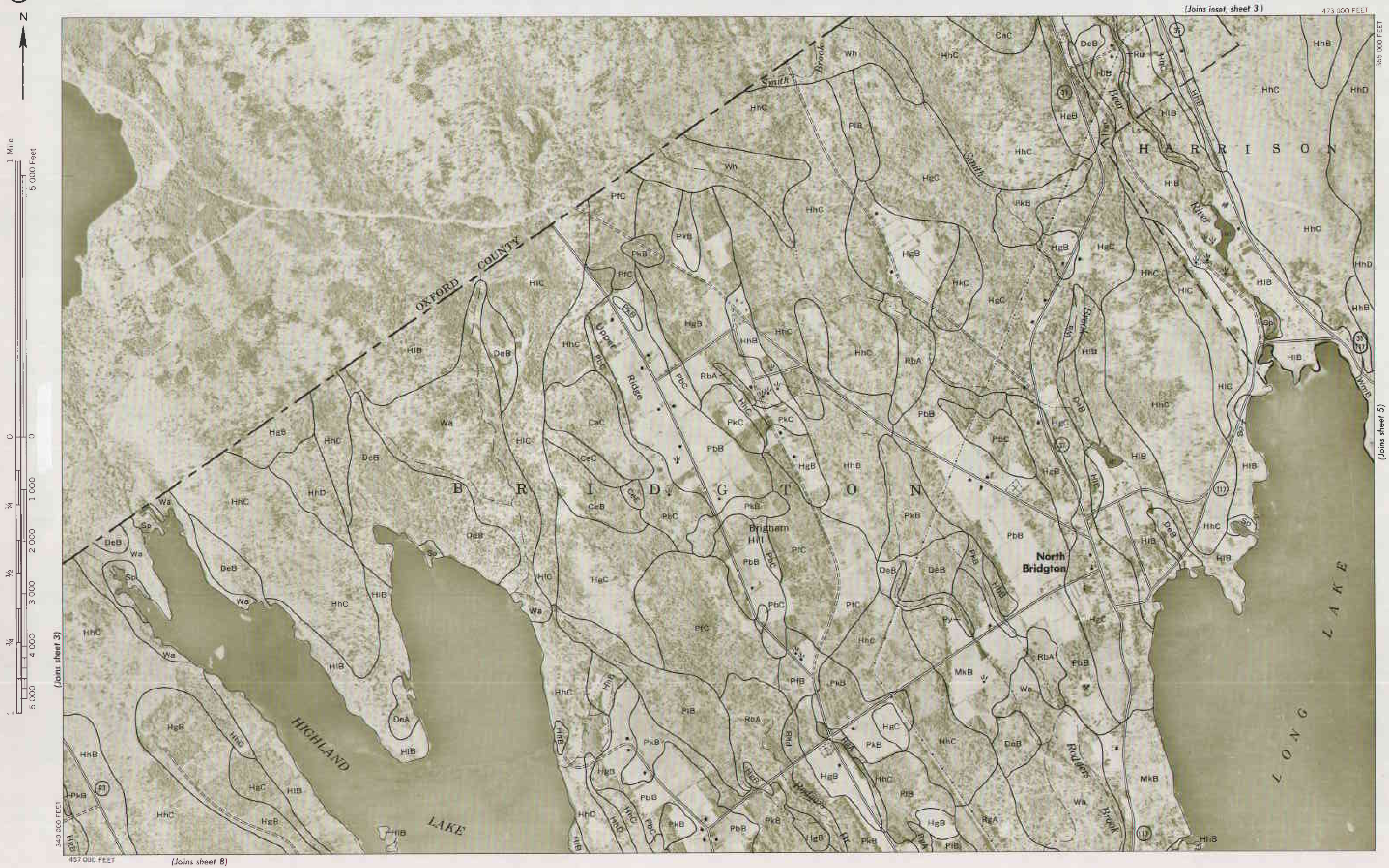
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 3

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

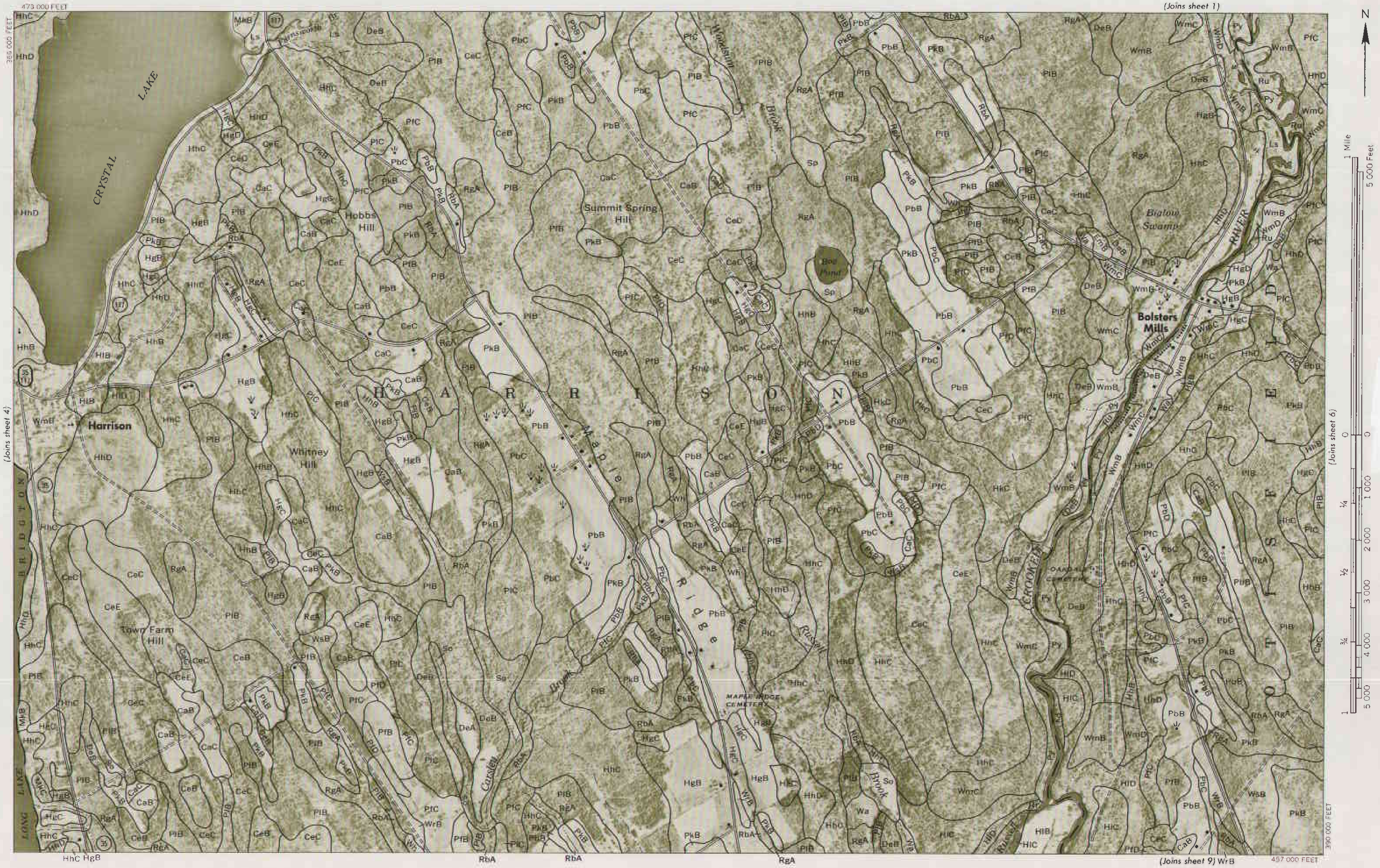
CUMBERLAND COUNTY, MAINE — SHEET NUMBER 4



Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 4



CUMBERLAND COUNTY, MAINE NO. 5

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate System, west zone.

6

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 7

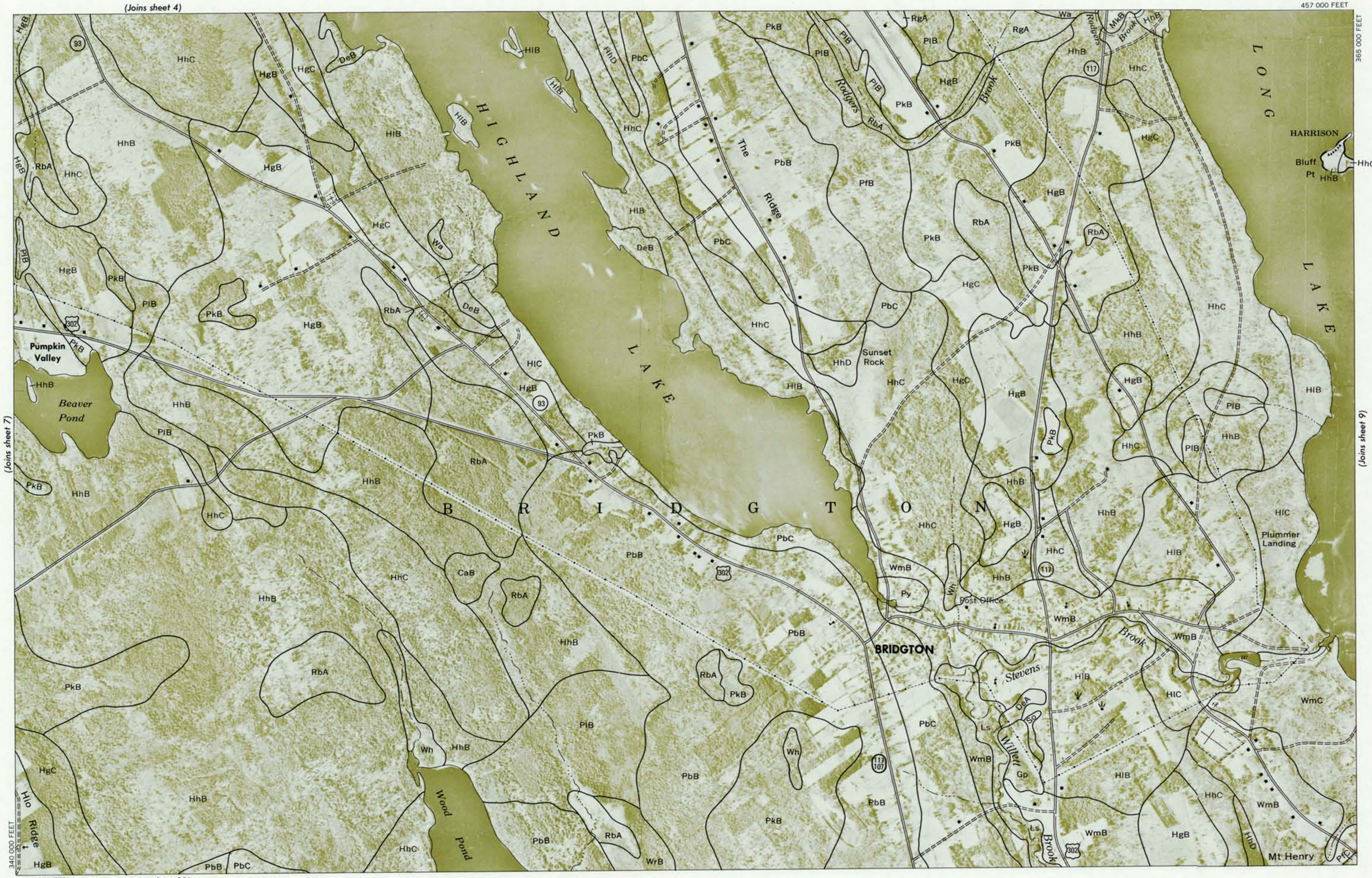
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

N

(Joins sheet 4)

457 000 FEET

365 000 FEET



Scale 1:20 000

1 Mile ¾ ½ ¼ 0

5 000 Feet 4 000 3 000 2 000 1 000 0 5 000

(Joins sheet 7)

(Joins sheet 9)

340 000 FEET

441 000 FEET

(Joins sheet 11)

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

CUMBERLAND COUNTY, MAINE — SHEET NUMBER 10

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 10

CUMBERLAND COUNTY, MAINE NO. 11

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

441 000 FEET

345 000 FEET

(Joins inset, sheet 16)

(Joins sheet 8)

N

1 Mile

5 000 Feet

WOOD POND

Sandy Creek

Mt. Henry

Otter Pond

Chase Hill

Dearborn Hill

BRIDGTON

OXFORD COUNTY

(Joins sheet 12)

(Joins sheet 16)

425 000 FEET

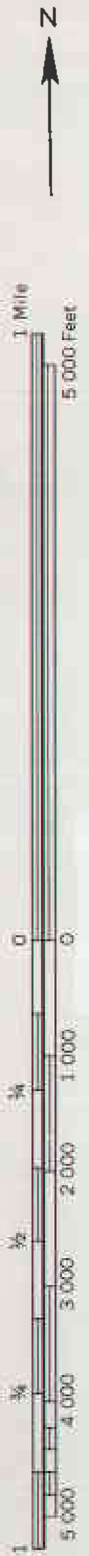
365 000 FEET

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 12

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.



Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 15

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

441 000 FEET

440 000 FEET

435 000 FEET

445 000 FEET

(Joins sheet 14)

(Joins sheet 15)

ANDROSCOGGIN COUNTY

NEW GLOUCESTER

Peacock Hill

Grandview Hill

Bald Hill

(Joins sheet 21)

(Joins sheet 20)

(Joins inset)

476 000 FEET

425 000 FEET

465 000 FEET

N

1 Mile

5 000 Feet

CUMBERLAND COUNTY, MAINE — SHEET NUMBER 16

Photobase from 1964 aerial photographs. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 16

COMBERLAND COUNTY, MAINE NO. 17

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

425 000 FEET

365 000 FEET

(Joins sheet 16)

(Joins sheet 12)

(Joins sheet 18)

(Joins sheet 23)

409 000 FEET

390 000 FEET

N

1 Mile

5 000 Feet

1 5 000 ¾ 4 000 ½ 3 000 ¼ 2 000 0 1 000 0

N

1 Mile

5 000 Feet

0 0

1/4 1 000

1/2 2 000

3/4 3 000

1 4 000

1 1/4 5 000

(Joins sheet 13)

425 000 FEET

415 000 FEET

Edes Falls

Cook Mills

Ledge Hill

Pike Corner

Dumpling Pond

Parker Pond

Collins Pond

Rattlesnake Mountain

Quaker Hill

Bay of Naples

Meadow Brook

Stanley Brook

Rolfe Brook

CRYOKED RIVER

N A P L E S

C A S C O

(Joins sheet 17)

(Joins sheet 19)

390 000 FEET

409 000 FEET

(Joins sheet 24)

Photobase from 1956 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 18

CUMBERLAND COUNTY, MAINE NO. 19

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

N

1 Mile

5 000 Feet

0 0

¼ 1 000

½ 2 000

¾ 4 000

1 5 000

(Joins sheet 15)

425 000 FEET

465 000 FEET

ANDROSCOGGIN COUNTY

Shaker Bog

Shaker Village

Sabbathday Pond

Mosquito Brook

Westcott Brook

Notched Pond

Royal River

Lily Pond

GRAVEL PIT

Little Hill

Snows Hill

The Sinkhole

TURNPIKE

MAINE

Brandy Brook

R A Y M O N D

G L O U C E S T E R

(Joins sheet 19)

(Joins sheet 21)

440 000 FEET

409 000 FEET

(Joins sheet 26)

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 21

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

(Joins inset, sheet 15)
(Joins sheet 20)
(Joins sheet 27)

425 000 FEET
465 000 FEET
490 000 FEET
409 000 FEET

Peacock Hill
Upper Gloucester
Cobbs Bridge
Lauraffe Ledge
New Gloucester
New Gloucester Station
Gloucester Hill
Meadow
ANDROSCOGGIN COUNTY
ROUTE 11
MAINE CENTRAL
CANADIAN NATIONAL
NEW GLOUCESTER

21
N

1 Mile
5 000 Feet
0
0
1/4
1 000
1/2
2 000
3/4
3 000
1
4 000
5 000

22

N

1 Mile

5 000 Feet

0 0

¼ 1 000

½ 2 000

¾ 4 000

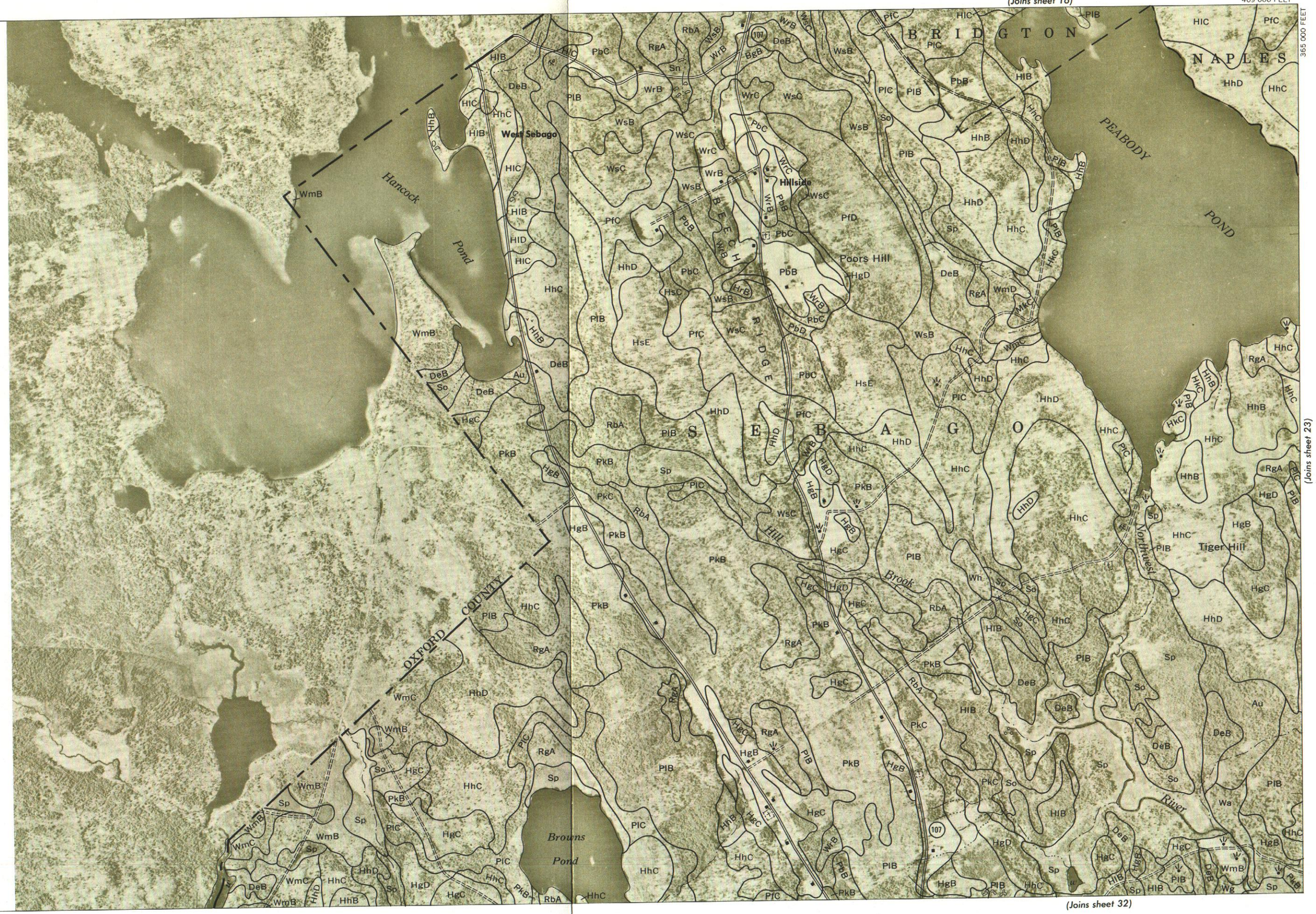
1 5 000

(Joins sheet 16)

409 000 FEET

365 000 FEET

(Joins sheet 23)



(Joins sheet 32)

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 22

CUMBERLAND COUNTY, MAINE NO. 23

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

(24)

N

1 Mile

5 000 Feet

1 0 ¼ 1 000 ½ 2 000 ¾ 3 000 1 4 000 5 000

409 000 FEET

415 000 FEET

(Joins sheet 18)

(Joins sheet 23)

(Joins sheet 25)

(Joins sheet 34)

390 000 FEET

393 000 FEET

Bay of Naples

NAPLES

SONGO RIVER

CROOKED RIVER

Songo Lock

SEBAGO LAKE STATE PARK

Kettle Cove

SEBAGO LAKE

Thompson Point

Dingley Islands

SOUTH CASCO

THOMAS POND

Panther Pond

Brown Hill

Rolfe Brook

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

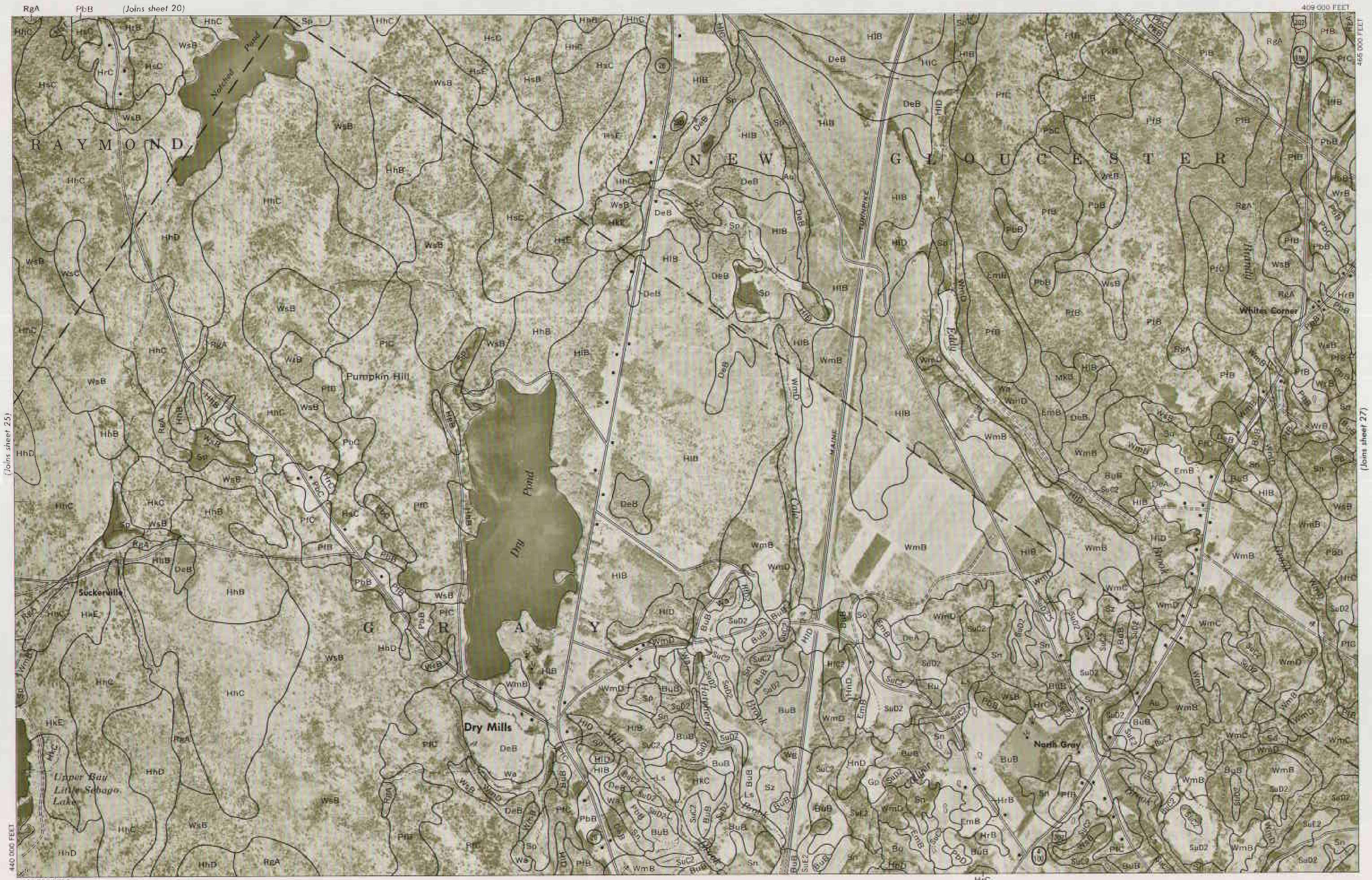
CUMBERLAND COUNTY, MAINE NO. 25

This map is one of a set comprised in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

CUMBERLAND COUNTY, MAINE — SHEET NUMBER 26

N

(Joins sheet 20)



1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1

(Joins sheet 25)

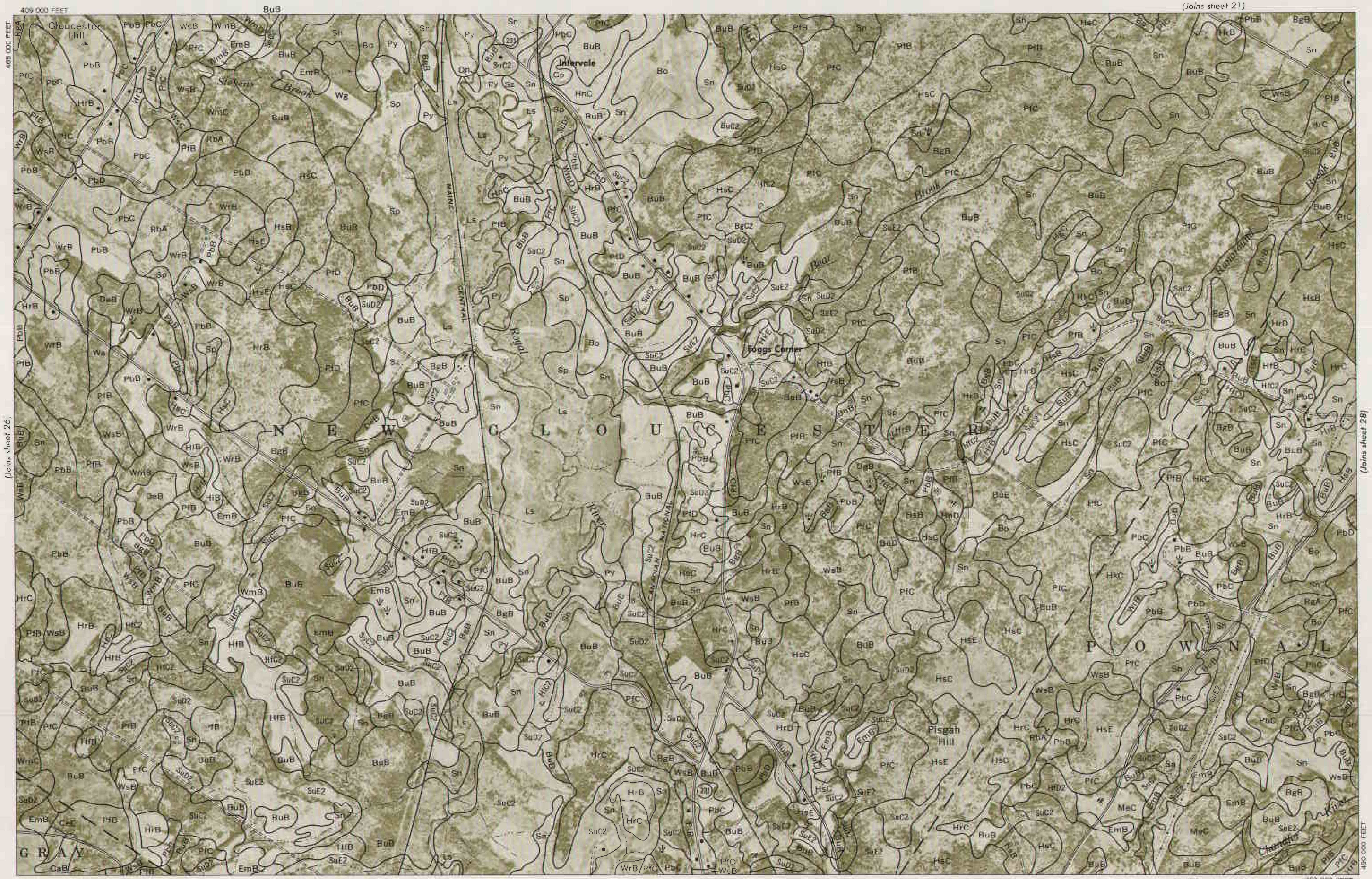
(Joins sheet 27)

(Joins sheet 36)

Photobase from 1964 aerial photographs. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

27

(Joins sheet 21)



409 000 FEET

465 000 FEET

490 000 FEET

393 000 FEET

(Joins sheet 26)

(Joins sheet 28)

(Joins sheet 37)

N

1 Mile — ¾ — ½ — ¼ — 0

5 000 Feet — 4 000 — 3 000 — 2 000 — 1 000 — 0

CUMBERLAND COUNTY, MAINE NO. 27

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photographs. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

This map is one of a set compiled in 1952 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

Photobase from 1964 aerial photographs. Positions of grid lines are approximate based on the Maine coordinate system, west zone.

MAINE NO. 28

N

409 000 FEET

515 000 FEET

(Joins inset, sheet 30)

ANDROSCOGGIN COUNTY

KENNEBEC COUNTY

ANDROSCOGGIN RIVER

Cox Pinnacle

Wardtown

Bald Rock

Hillside

Rocky Hill

FREEPORT

(28)

(Joins sheet 39)

(Joins sheet 30)

393 000 FEET

540 000 FEET

1 Mile

5 000 Feet

CUMBERLAND COUNTY, MAINE NO. 29

This map is one of a set completed in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1956 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone

N

1 Mile

5 000 Feet

5 000 1 000 2 000 3 000 4 000

409 000 FEET

565 000 FEET

417 000 FEET

540 000 FEET

528 000 FEET

409 000 FEET

540 000 FEET

393 000 FEET

(Joins sheet 29)

(Joins sheet 29)

(Joins sheet 40)

(Joins sheet 31)

ANDROSCOGGIN RIVER

SAGADOHAC COUNTY

ANDROSCOGGIN COUNTY

BRUNSWICK

Rocky Hill

Deep Cut

Driscoll Island

JONES CEMETERY

RIVERSIDE CEMETERY

MAINE CEMETERY

GOLF COURSE

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 30

CUMBERLAND COUNTY, MAINE NO. 31
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

409 000 FEET

565 000 FEET

(Joins sheet 30)

(Joins sheet 41)

393 000 FEET

590 000 FEET

Tm

31

N

1 Mile

5 000 Feet

0 0

¼ 1 000

½ 2 000

¾ 3 000

1 4 000

5 000

N

1 Mile

5 000 Feet

0 0

¼ 1 000

½ 2 000

¾ 4 000

1 5 000

(Joins sheet 22)

393 000 FEET

365 000 FEET

(Joins sheet 33)

340 000 FEET

377 000 FEET

(Joins inset, sheet 42)

(Joins sheet 43)

Barker Pond

Hogfat Hill

Browns Pond

Mill Brook

Bonnie Pond

Northwest River

Southwest Pond

Sebago

Convene

Douglas Hill

Douglas Mountain

Flints Mountain

Lombard Hill

Robinson Hill

Dykes Mountain

Webb Rowe Mountain

Saddleback Hills

OXFORD COUNTY

BALDWIN

SEBAGO

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

(Joins sheet 23)

(Joins sheet 32)

(Joins sheet 34)

(Joins sheet 44)

N

1 Mile
5 000 Feet

CUMBERLAND COUNTY, MAINE NO. 33

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

N

1 Mile

5 000 Feet

0 0

(Joins sheet 33)

(Joins sheet 24)

SEBAGO LAKE STATE PARK

Dingley Island

SEBAGO LAKE

CASCO

RAYMOND

RAYMOND

JORDAN BAY

SEBAGO LAKE

393 000 FEET

415 000 FEET

390 000 FEET

377 000 FEET

(Joins sheet 45)

(Joins sheet 35)

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone

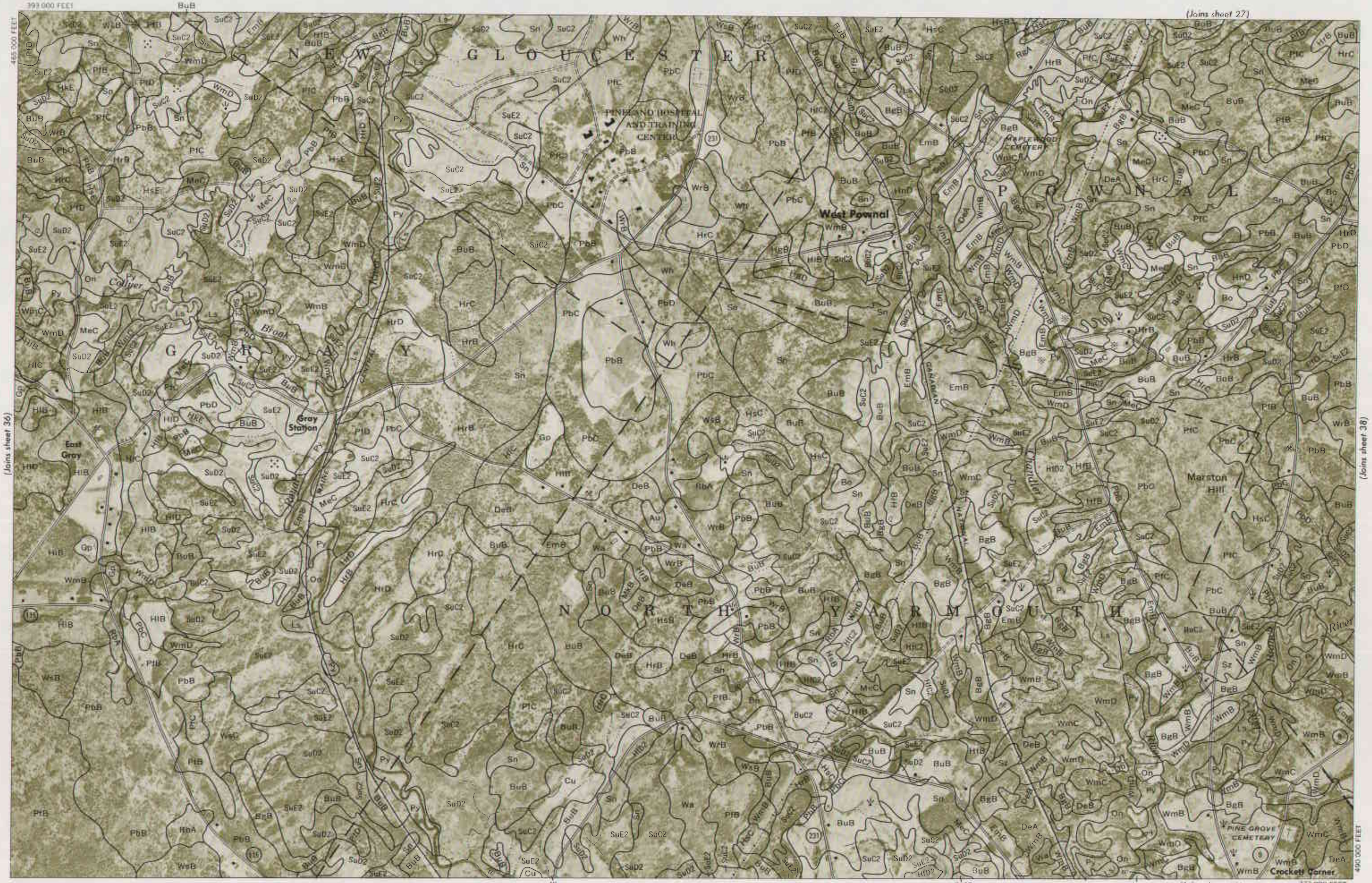
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 35

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

CUMBERLAND COUNTY, MAINE — SHEET NUMBER 36

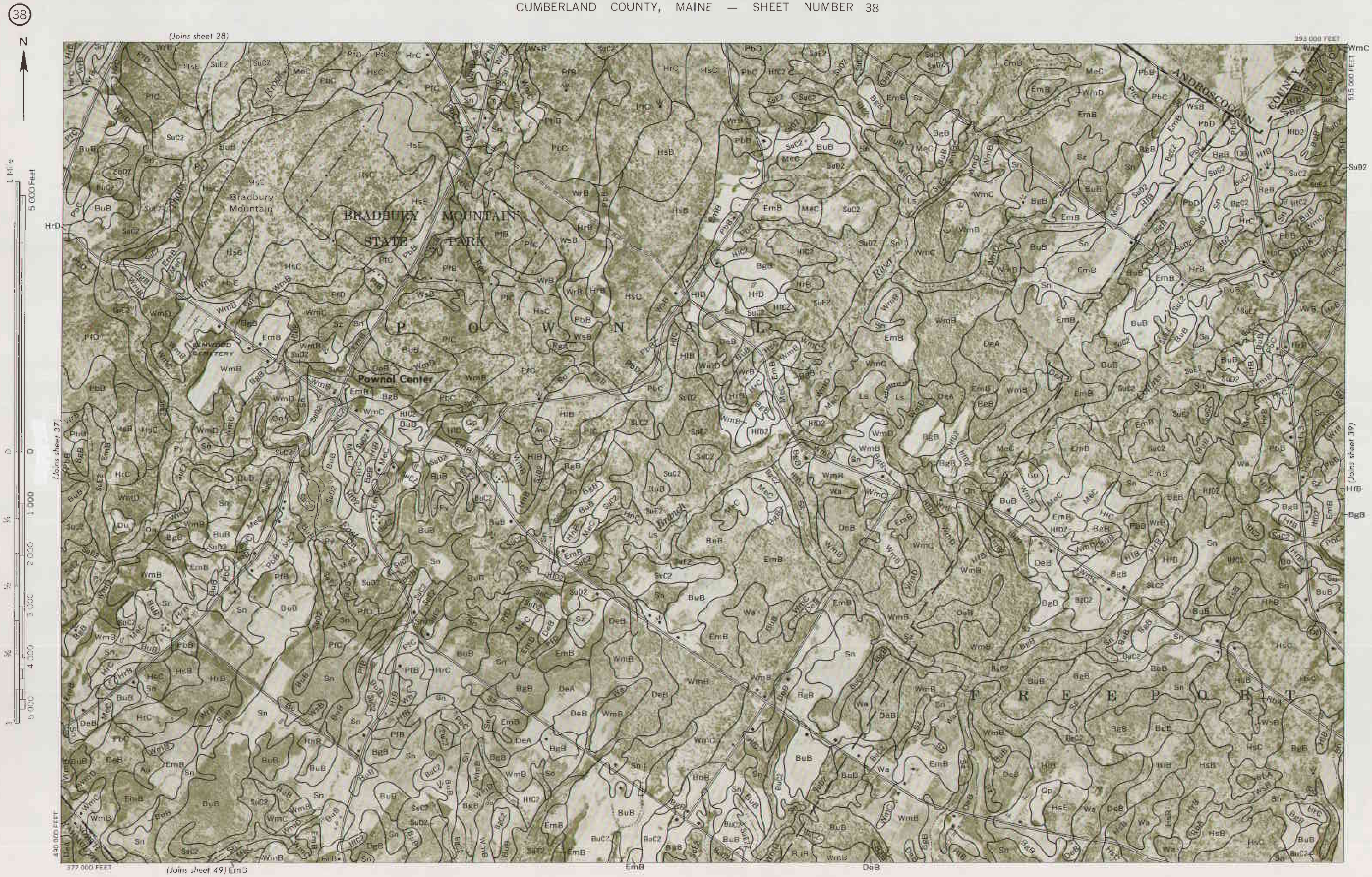
Photobase from 1964 aerial photography. Positions of grid ticks are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.



1 Mile
5 000 Feet
0
0

CUMBERLAND COUNTY, MAINE NO. 37

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

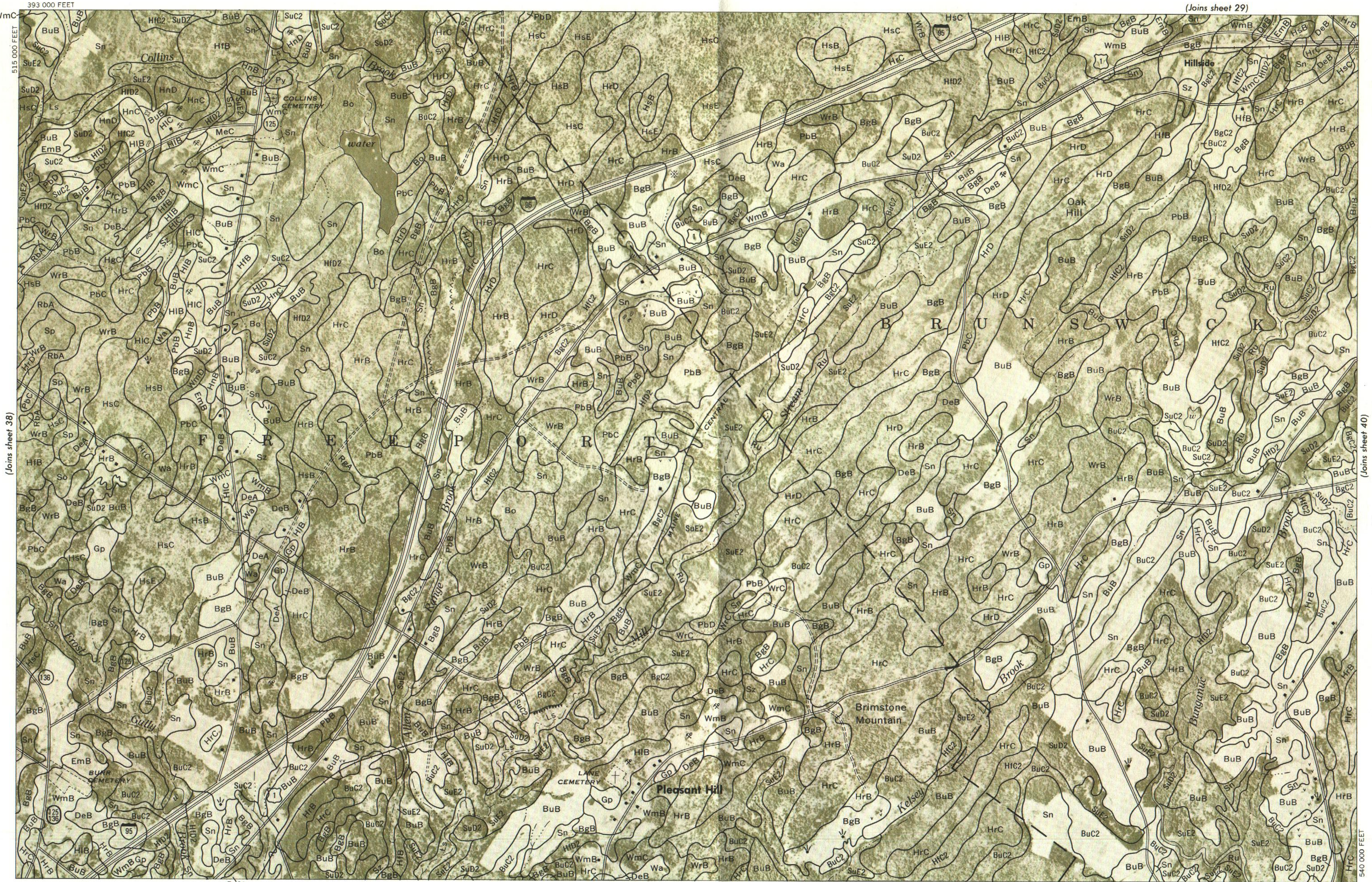


Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1973 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 38

CUMBERLAND COUNTY, MAINE NO. 39

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.



40

N

1 Mile

5 000 Feet

0 0 ¼ 1 000 ½ 2 000 ¾ 4 000 1 5 000

(Joins sheet 30)

393 000 FEET

565 000 FEET

540 000 FEET

377 000 FEET

(Joins sheet 39)

(Joins sheet 51)

(Joins sheet 41)

MAINE CENTRAL

ANDROSCOGGIN RIVER

BOWDOIN COLLEGE

BRUNSWICK

Growstown

Deep Cut

Mare Brook

Dyer Corner

Buttermilk Mountain

FIRST PARISH CEMETERY

MAGAOIT YARD CEMETERY

Mare Creek

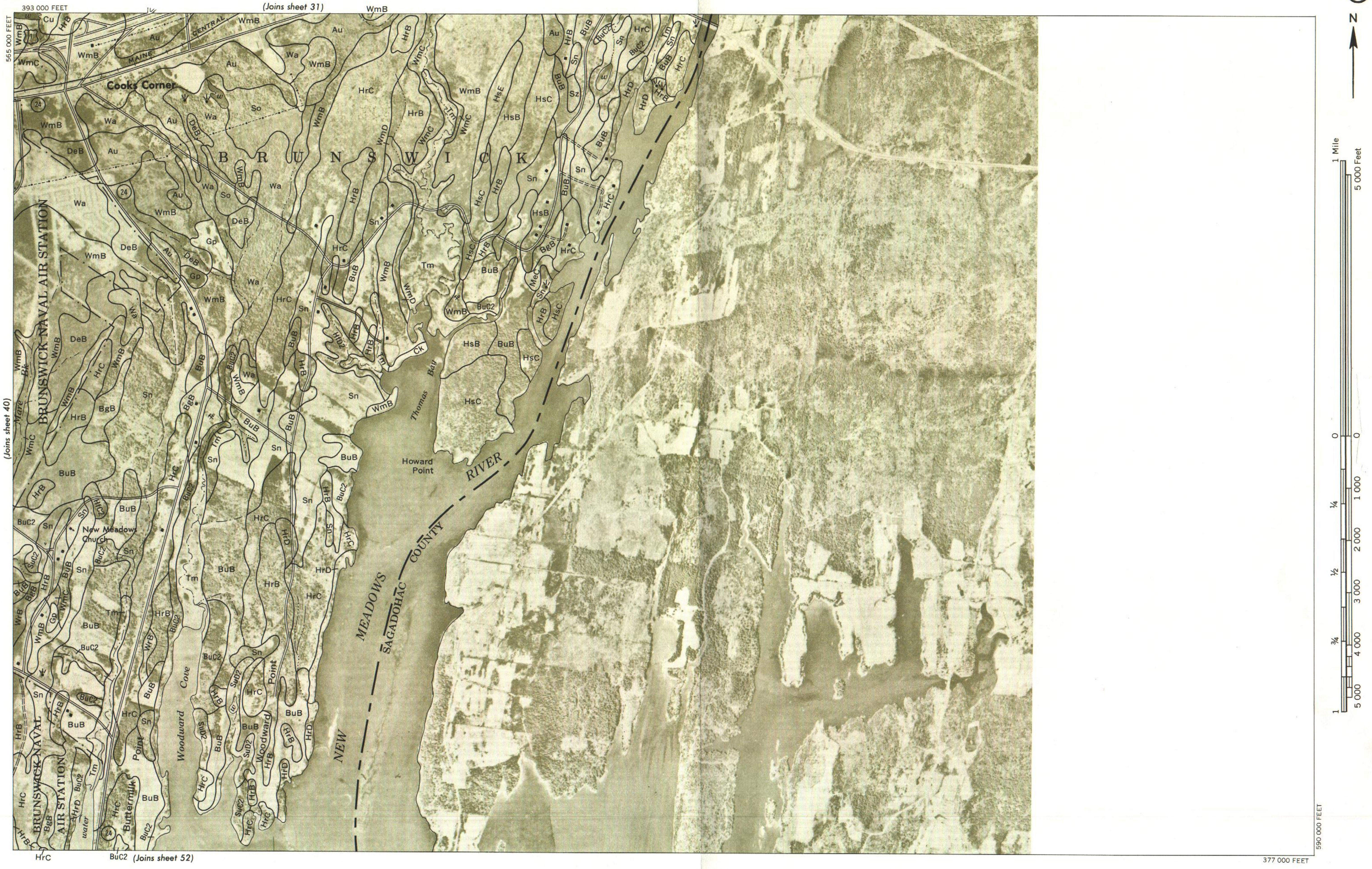
BRUNSWICK NAVAL AIR STATION

SOIL SURVEY OF CUMBERLAND COUNTY, MAINE NO. 40

LIMIT OF SOIL SURVEY

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.



CUMBERLAND COUNTY, MAINE NO. 41

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

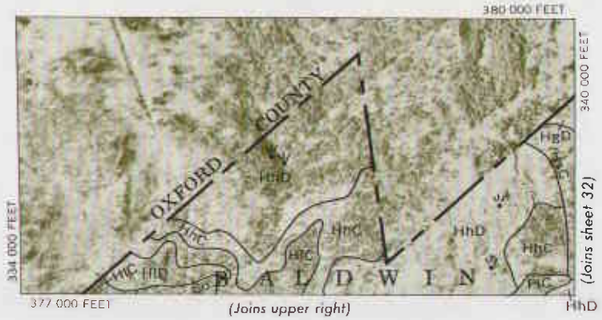
(42)

N

1 Mile
5 000 Feet

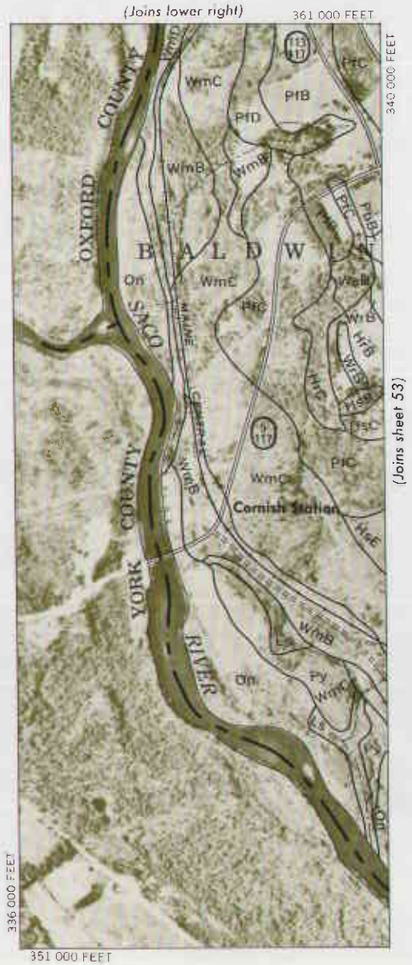
1 5 000 | ¾ 4 000 | ½ 3 000 | ¼ 2 000 | 0 1 000 | 0

INSET A



INSET B

(Joins lower right)



Photolinese from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 42

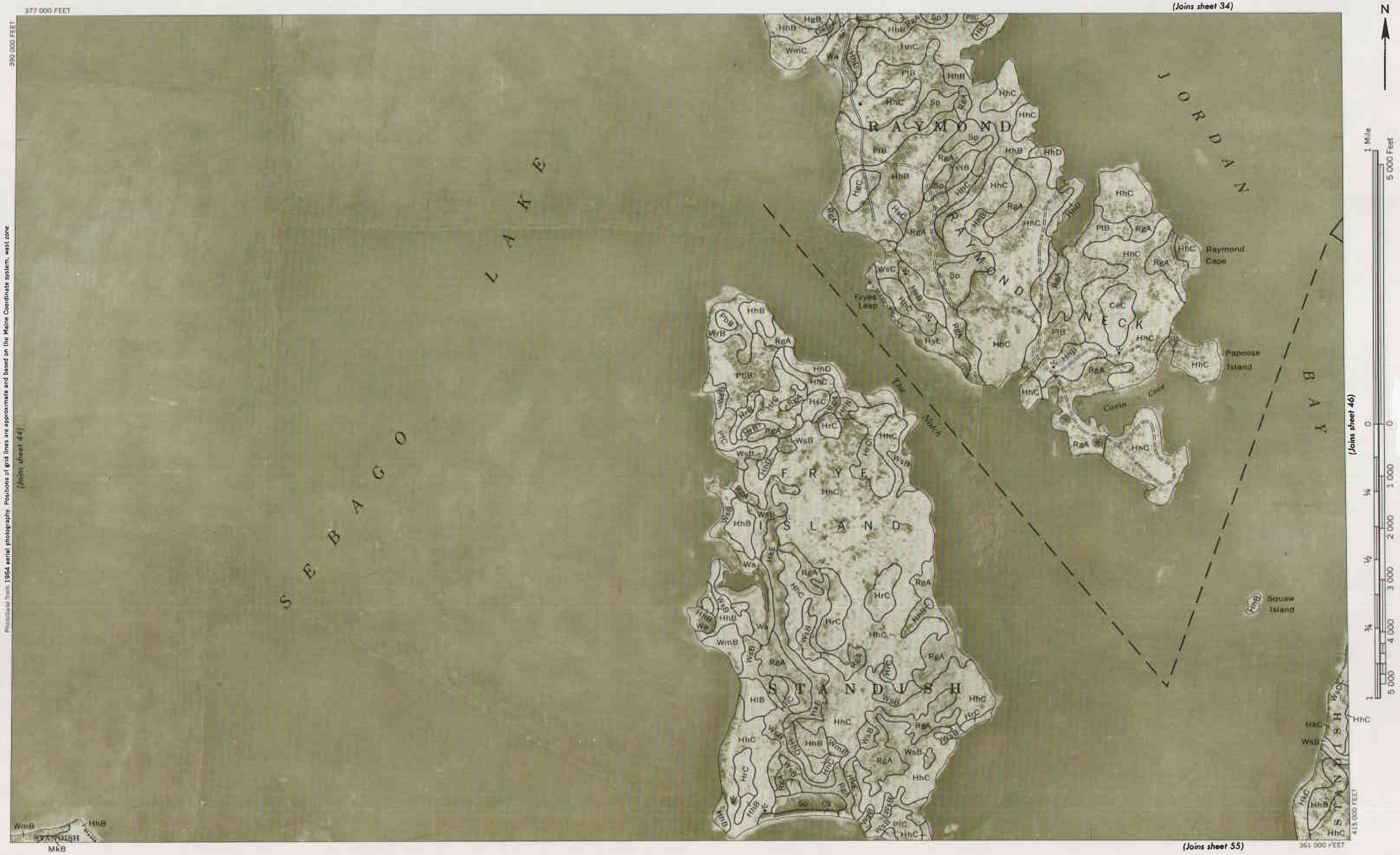
CUMBERLAND COUNTY, MAINE NO. 43

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 44



CUMBERLAND COUNTY, MAINE NO. 45

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone

CUMBERLAND COUNTY, MAINE — SHEET NUMBER 46

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 46

377 000 FEET

(Joins sheet 36)

440 000 FEET

HsC
HsC

(Joins sheet 46)

(Joins sheet 48)

(Joins sheet 57)

465 000 FEET

361 000 FEET

N

1 Mile
5 000 Feet
0 0
¼ 1 000
2 000
½ 3 000
¾ 4 000
1 5 000

CUMBERLAND COUNTY, MAINE NO. 47

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

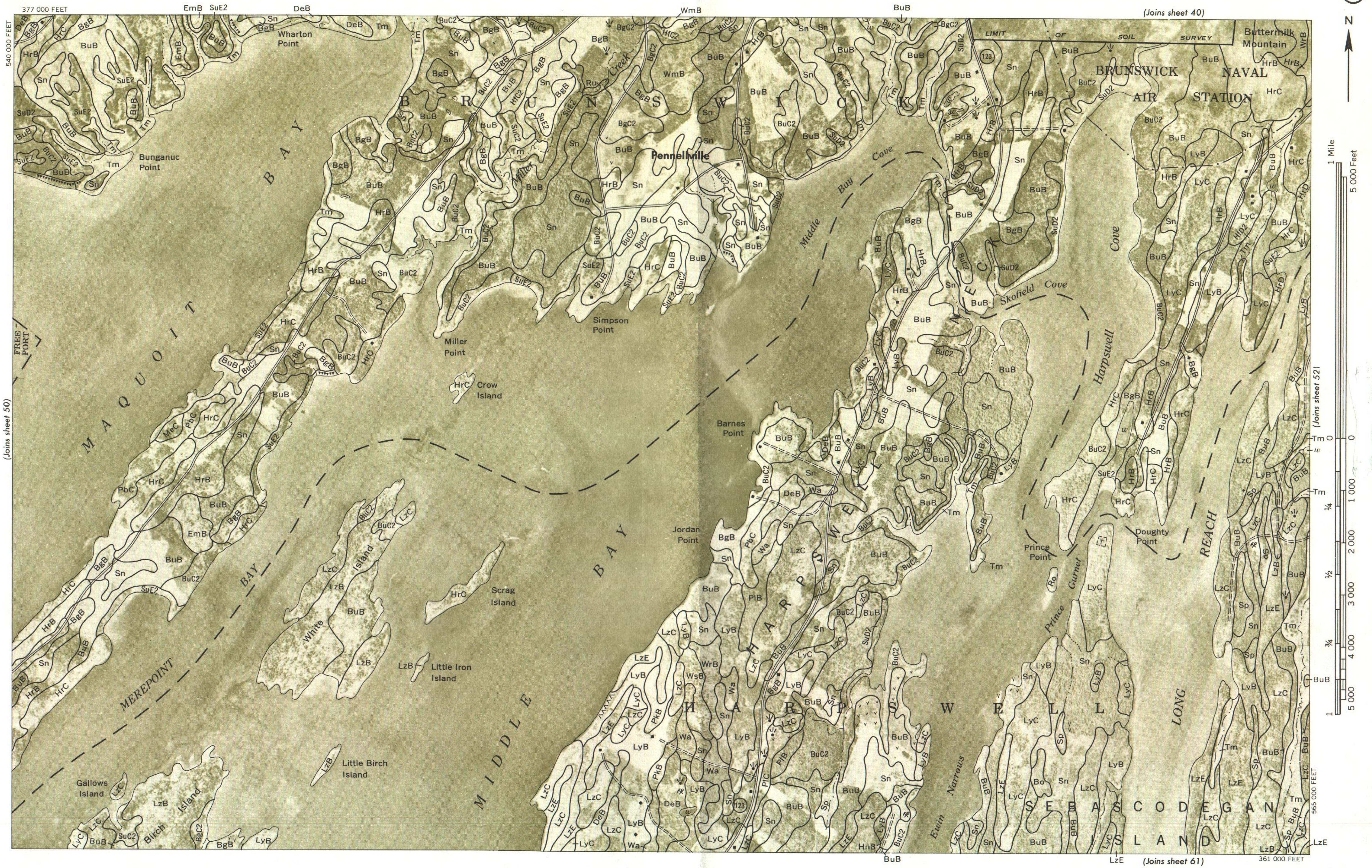
Photobase from 1964 aerial photographs. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 48

CUMBERLAND COUNTY, MAINE NO. 49

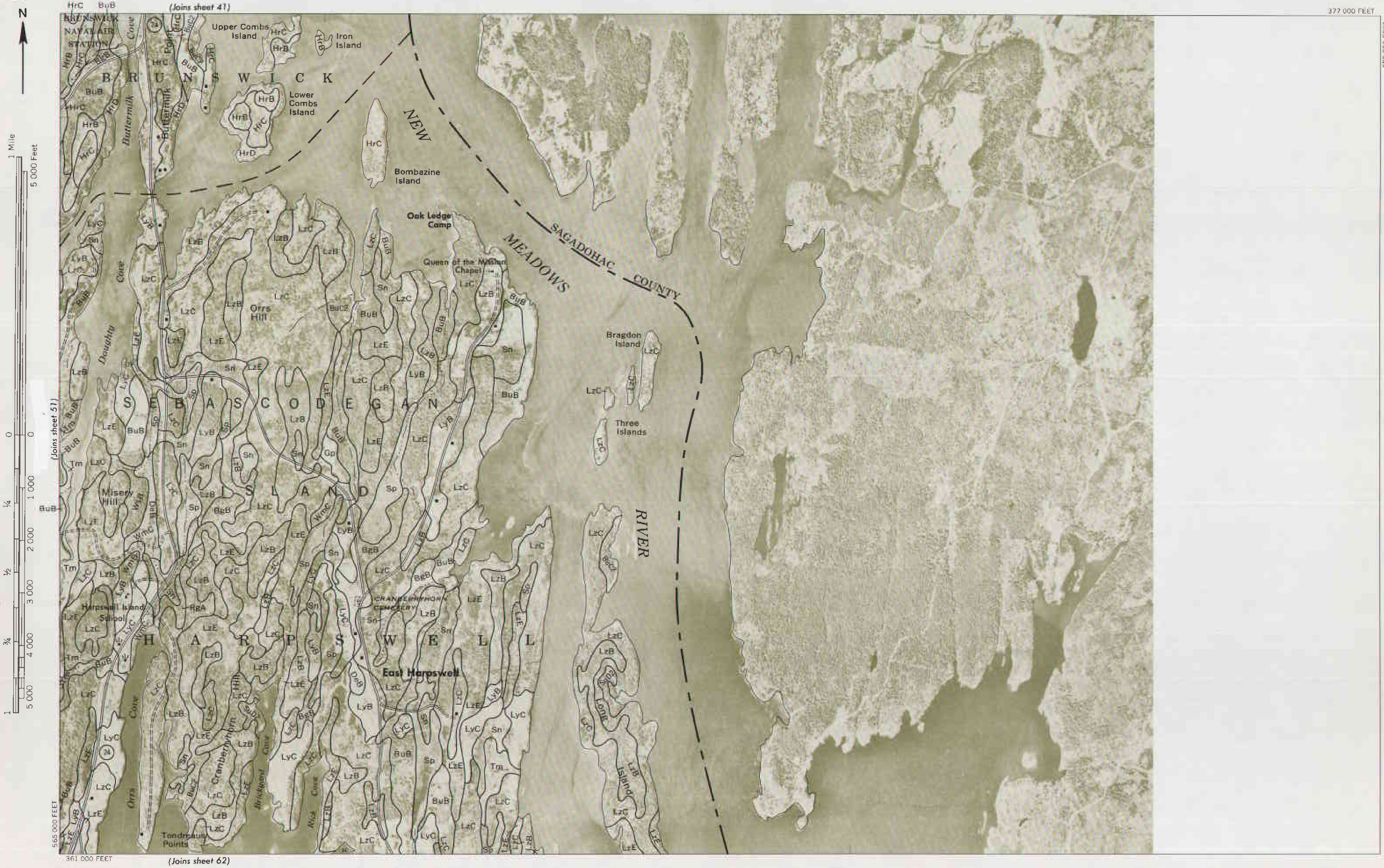
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.


(Joins sheet 39)
(Joins sheet 49)
(Joins sheet 51)
(Joins sheet 60)
N
1 Mile
5 000 Feet
377 000 FEET
540 000 FEET
515 000 FEET
361 000 FEET
FREEPORT
Mast Landing
Porter Landing
Morse St School
WOODLAWN CEMETERY
FLYING POINT CEMETERY
Bartol Island
HARRASEEKET BAY
CASCO BAY
Cushing Briggs
South Freeport
F R E E P O R T
B R U N S W I C K
Bunganuc Landing
Goose Cove
Goose Point
Little Flying Point
Brickyard Cove
Flying Point Neck
MAQUOIT BAY
MEREPOINT NECK
MEREPOINT BAY
Merepoint
NECK
Mitchell Ledge
Kelsey
Frost Gully
Collins Brook
River



CUMBERLAND COUNTY, MAINE NO. 51

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.



Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

361 000 FEET

340 000 FEET

(Joins sheet 43)

(Joins inset B, sheet 42)

(Joins sheet 54)

N

1 Mile

5 000 Feet

0 0

1/4 1 000

1/2 2 000

3/4 3 000

1 4 000

5 000

BALDWIN

Harding Hill

Dug Hill Brook

Pigeon Brook

Sand Pond

East Baldwin

Post Office

MAINE CENTRAL

RIVER

YORK COUNTY

SACO

water

365 000 FEET

345 000 FEET

CUMBERLAND COUNTY, MAINE NO. 53

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

(Joins sheet 44)

361 000 FEET

390 000 FEET

N

1 Mile

5 000 Feet

0 0 ¼ 1 000 ½ 2 000 ¾ 3 000 1 4 000 5 000

B A L D W I N

S T A N D I S H

East Baldwin

Steep Falls

Adams Pond

Duck Pond

Quaker Brook

Tucker Brook

Stout Brook

SACO RIVER

YORK COUNTY

MAINE CENTRAL

(Joins sheet 53)

(Joins sheet 55)

(Joins sheet 63)

365 000 FEET

345 000 FEET

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 54

55

361 000 FEET

(Joins sheet 45)

N

SEBAGO LAKE

STANDISH

LOWER BAY

Harmon Beach

Frye Island

Indian Island

Richville

water

MAINE CENTRAL

FRIENDSHIP CEMETERY

Rich Mill Pond

(Joins sheet 54)

(Joins sheet 56)

(Joins sheet 64)

345 000 FEET

415 000 FEET

1 Mile

5 000 Feet

0 1 000 2 000 3 000 4 000 5 000

0 ¼ ½ ¾ 1

CUMBERLAND COUNTY, MAINE NO. 55

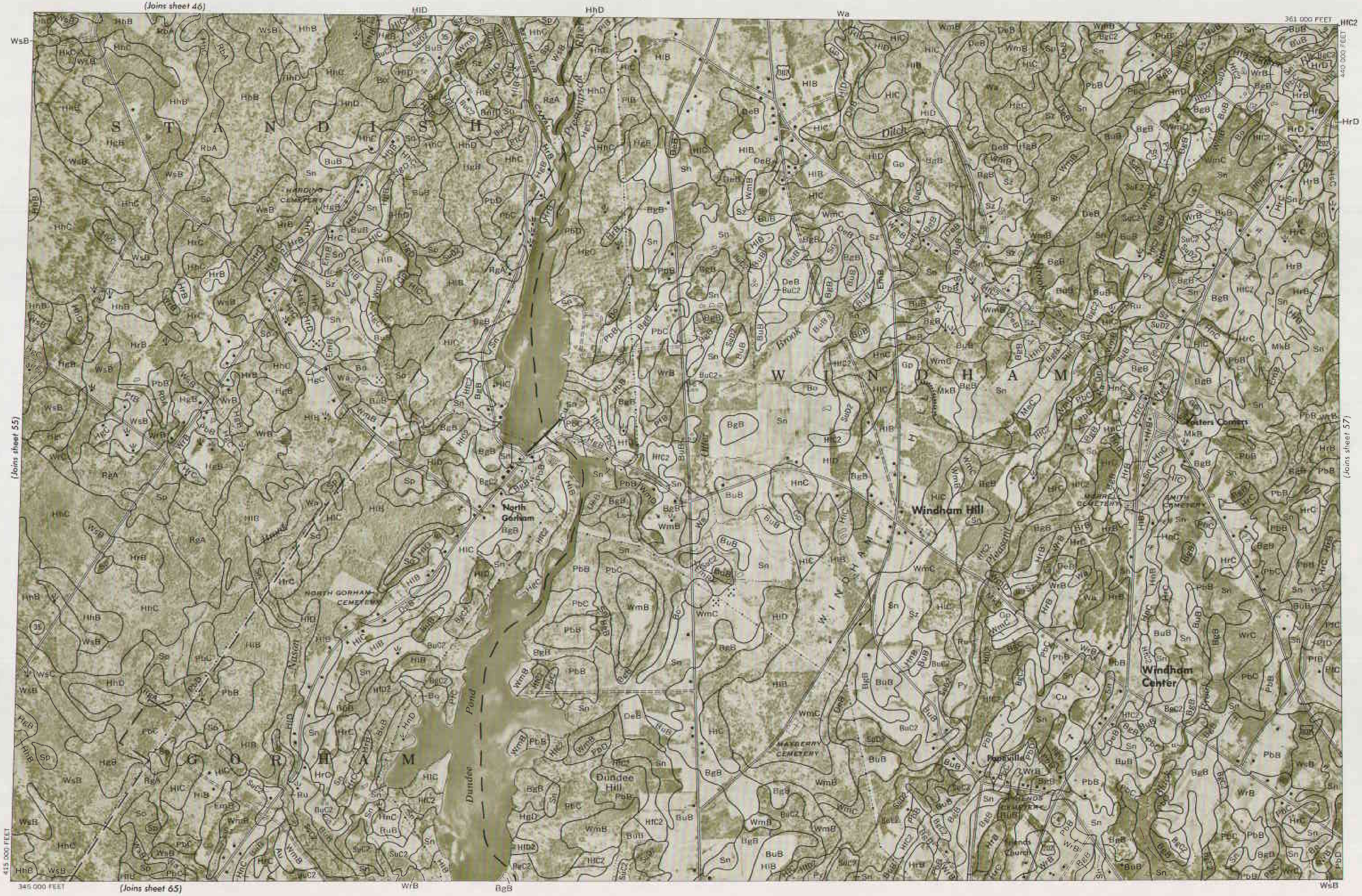
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture Soil Conservation Service and the Maine Agricultural Experiment Station.

Photobase from 1964 aerial photography. Universal transverse Mercator grid ticks are approximate and based on the Maine coordinate system, west zone.

N

(Joins sheet 46)

(Joins sheet 55)



(Joins sheet 57)

(Joins sheet 65)

1 Mile

5 000 Feet

0   0

¼   1 000

½   2 000

¾   3 000

1   4 000

5 000

361 000 FEET

440 000 FEET

415 000 FEET

345 000 FEET

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 57

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate System, west zone.

58

N

1 Mile

5 000 Feet

0 0

¼ 1 000

½ 2 000

¾ 4 000

1 5 000

(Joins sheet 48)

361 000 FEET

490 000 FEET

(Joins sheet 57)

(Joins sheet 59)

(Joins sheet 67)

345 000 FEET

465 000 FEET

Bruce Hill

Walnut Hill

NORTH YARMOUTH

YARMOUTH

CUMBERLAND

FALMOUTH

Cumberland Center

Royal Junction

Cumberland Farmers Club

PARRIS CEMETERY

MOSS-SIDE CEMETERY

Blanchard Pond

Greeley Institute

Post Office

Sweetser School

MAINE

CENTRAL

ROYAL RIVER

Photolinear from 1956 aerial photographs. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 58

CUMBERLAND COUNTY, MAINE NO. 59

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

361 000 FEET

490 000 FEET

(Joins sheet 49)

(Joins sheet 58)

(Joins sheet 68)

345 000 FEET

315 000 FEET

(Joins sheet 60)

59

N

1 Mile

5 000 Feet

SuE2 BgB HrC

60

N

1 Mile

5 000 Feet

0 0

1/4 1 000

1/2 2 000

3/4 3 000

4 000

5 000

1

(Joins sheet 50)

(Joins sheet 59)

(Joins sheet 61)

(Joins sheet 69)

345 000 FEET

515 000 FEET

540 000 FEET

361 000 FEET

BAY

HARRASEEKET

NECK

WOLF

South Freeport

Pumpkin Knob

Moore Point

Stocksbridge Point

Bowman Island

Indian Island

Johns Point

Flying Point

Point

MAQUOIT BAY

Sister Island

Williams Island

Pettingill Island

Sow and Pigs

Merepoint

Mere Point

BRUNSWICK

MEREPOINT BAY

Howard Point

Birch Island

F R E E P O R T

C A S C O B A Y

Bustins Island

Crab Island

Little Bustins Island

Y A R M O U T H

Little Moshier Island

H A R P S W E L L

Island

Upper Goose

Lower Goose

The Goslings

Shelter Island

Harpswell Neck

MIDDLE BAY

Photobase from 1964 aerial photography. Positions of print lines are approximate and based on the Maine coordinate system, west zone

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station

CUMBERLAND COUNTY, MAINE NO. 60

361 000 FEET

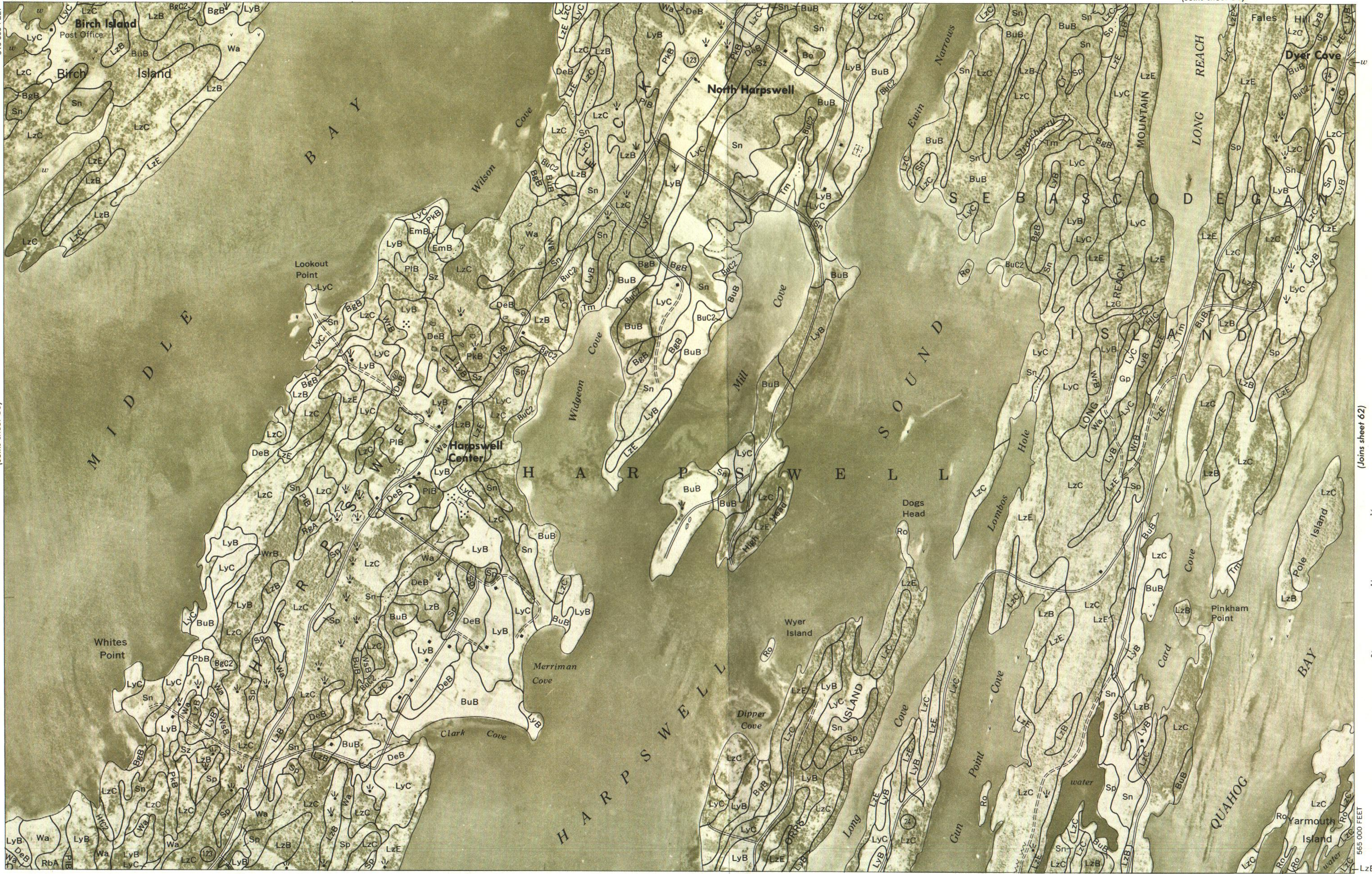
540 000 FEET

(Joins sheet 51)

(Joins sheet 60)

(Joins sheet 62)

(Joins sheet 70)



N

1 Mile — 5 000 Feet

565 000 FEET

345 000 FEET

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

63

345 000 FEET

365 000 FEET

(Joins sheet 54)

N

Stroud Brook

SACO

YORK COUNTY

RIVER

Little Watchic Pond

Watchic Pond

OAK HILL CEMETERY

Oak Hill

Oak Hill Chapel

Higgins Corner

S T A N D I S H

(Joins sheet 64)

(Joins sheet 72)

390 000 FEET

329 000 FEET

1 Mile

5 000 Feet

1 5 000 | ¾ 4 000 | ½ 3 000 | ¼ 2 000 | 0 1 000 | 0

CUMBERLAND COUNTY, MAINE NO. 63

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

CUMBERLAND COUNTY, MAINE — SHEET NUMBER 64

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 65

This map is one of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate System, west zone.

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 67

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

68

N

1 Mile

5 000 Feet

345 000 FEET

490 000 FEET

329 000 FEET

(Joins sheet 59)

(Joins sheet 67)

(Joins sheet 69)

(Joins sheet 77)

Cumberland Foreside

Speals Hill

Widgwood Park

Sunset Point

Prince Point

White Cove

Drinkwater Point

Sandy Point

Blaney Point

Cornfield Point

Cousins Island

Madelon Point

Littlejohn Island

Birch Point

Doyle Point

Spruce Point

Division Point

Chebeague Island

Sturdivant Island

FALMOUTH

Falmouth Foreside

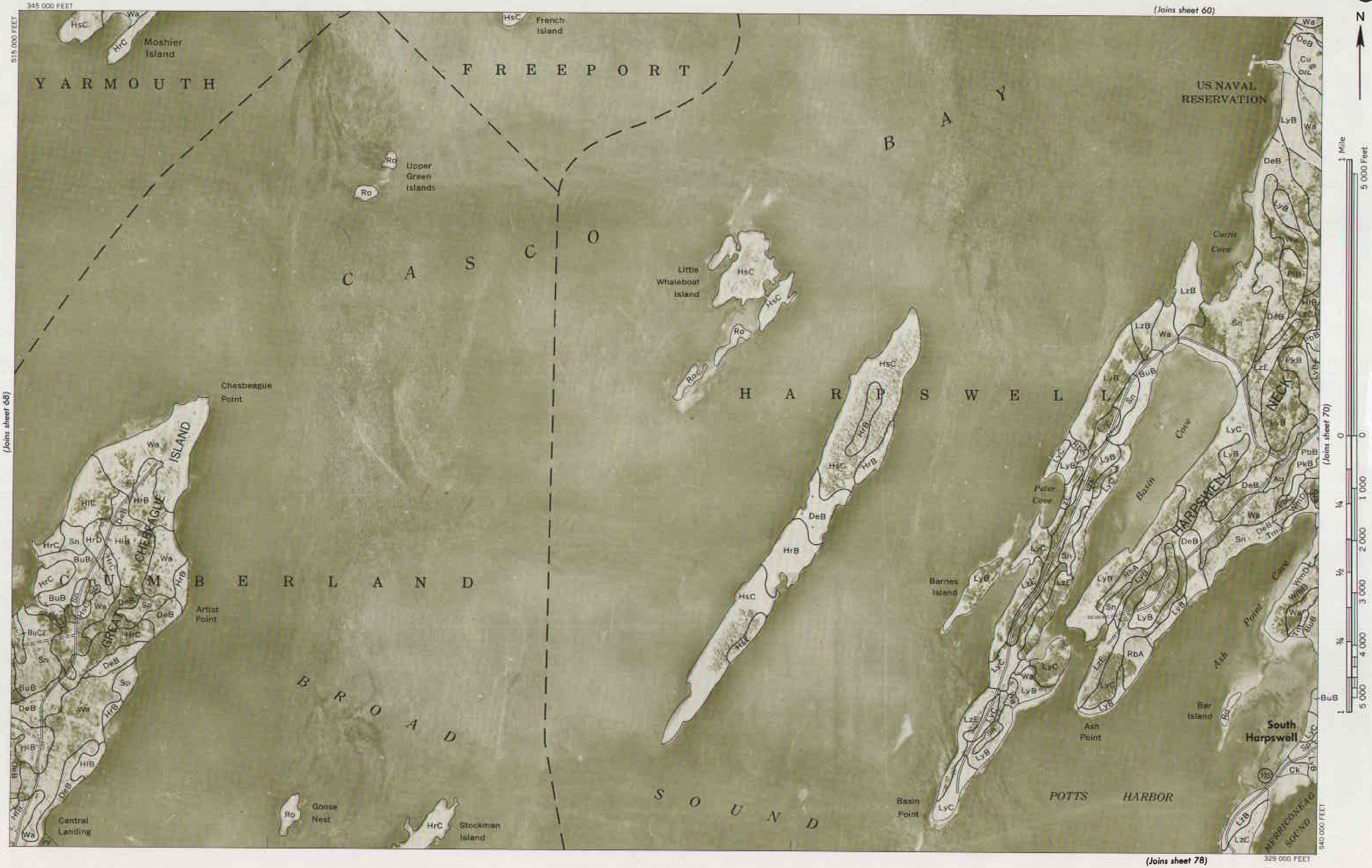
Y A R M O U T H

C A S C O B A Y

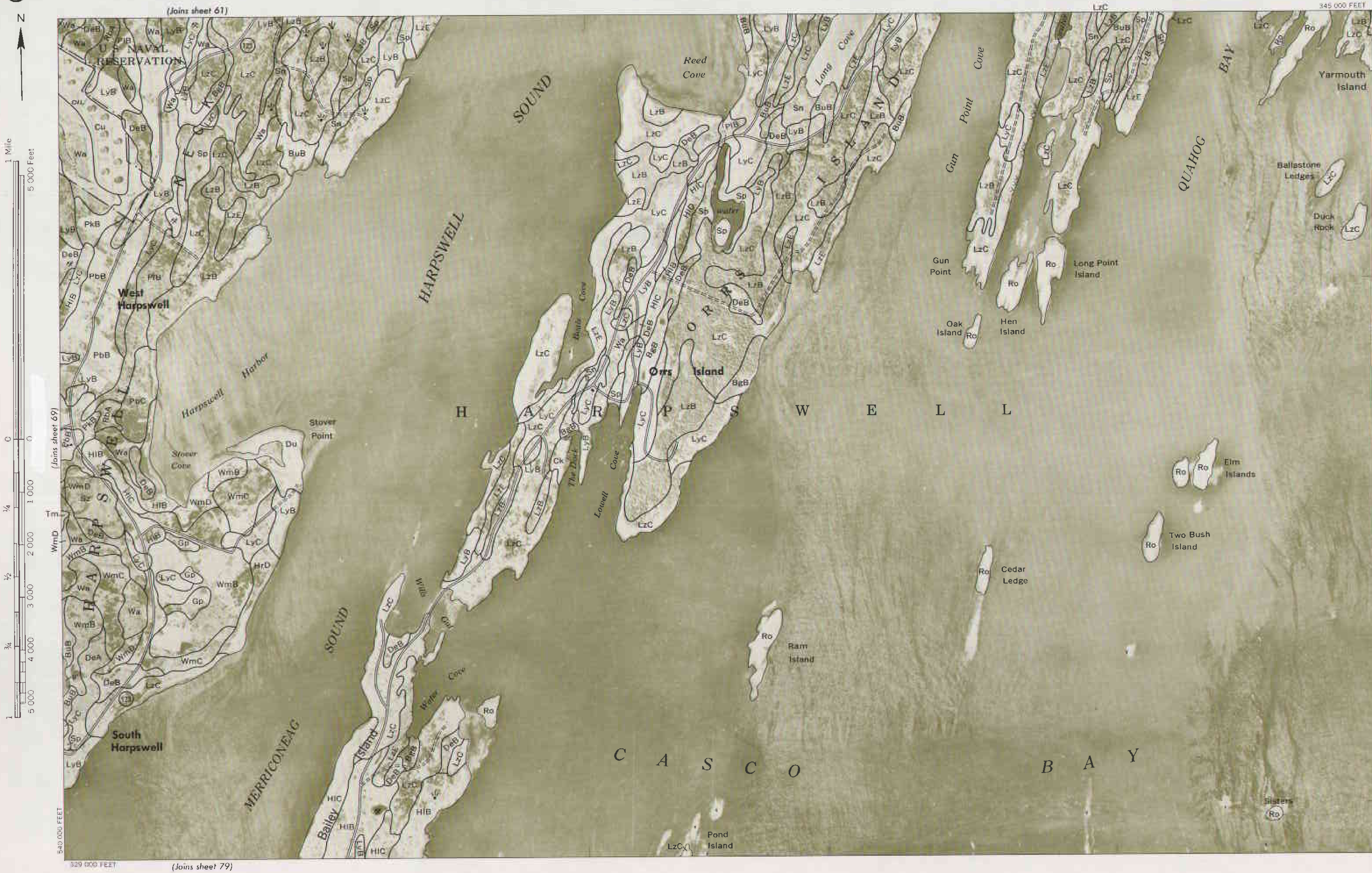
C U M B E R L A N D

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.



CUMBERLAND COUNTY, MAINE NO. 69
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone



Photobase from 1966 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 71

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

345 000 FEET

(Joins sheet 62)

565 000 FEET

Yarmouth Island

Ridley Cove

Tm

Sandy Cove

Fort Point

East Cundy Point

Flash Island

West Cundy Point

Rogue Island

H A R P S W E L L

Jenny Island

C A S C O B A Y

Long Ledge

Flag Island

A T L A N T I C O C E A N

(Joins sheet 70)

SAGADOHAC COUNTY

(Joins upper right)

328 000 FEET

(Joins lower left)

567 000 FEET

CASCO BAY

H A R P S W E L L

Mark Island

(Joins sheet 79)

ATLANTIC OCEAN

East Brown Cow

SAGADOHAC COUNTY

575 000 FEET

317 000 FEET

590 000 FEET

329 000 FEET

N

1 Mile

5 000 Feet

1 5 000 ¾ 4 000 ½ 3 000 ¼ 2 000 0 1 000 0

N

1 Mile

5 000 Feet

0 0 0

1/4 1 000

1/2 2 000 3 000

3/4 4 000

1 5 000

(Joins sheet 63)

329 000 FEET

390 000 FEET

Watchic Pond

Two Trails

Dow Center

Bonny Eagle Pond

STANDISH

YORK COUNTY

SACO RIVER

(Joins sheet 73)

365 000 FEET

313 000 FEET

(Joins inset)

(Inset, 73)

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 73

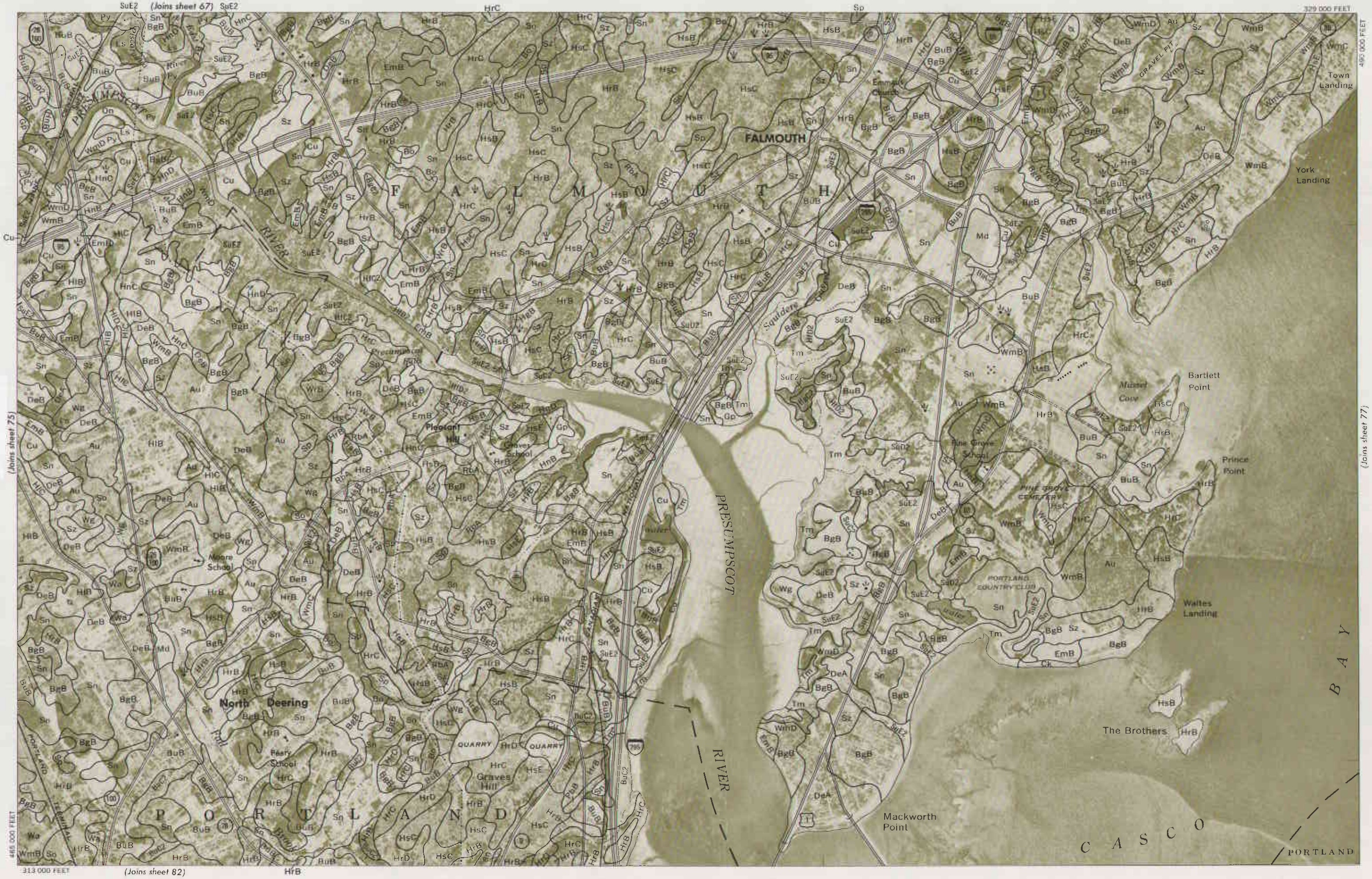
This map is one of a set compiled in 1973 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 74

CUMBERLAND COUNTY, MAINE NO. 75

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1968 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.



Photobase from 1956 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

329 000 FEET

(Joins sheet 68)

490 000 FEET

(Joins sheet 76)

(Joins sheet 78)

N

1 Mile

5 000 Feet

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

515 000 FEET

HsB

(Joins sheet 83)

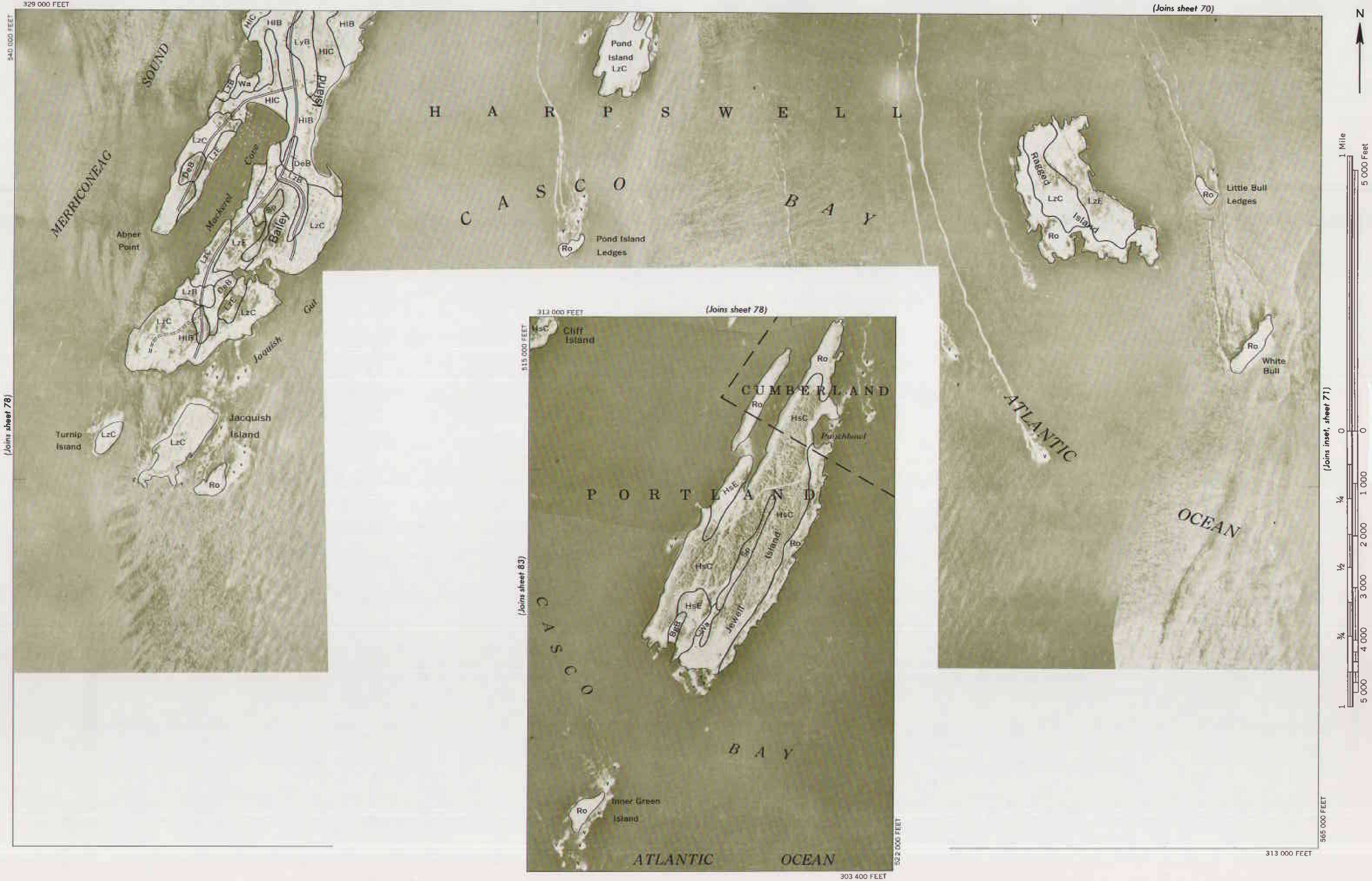
313 000 FEET

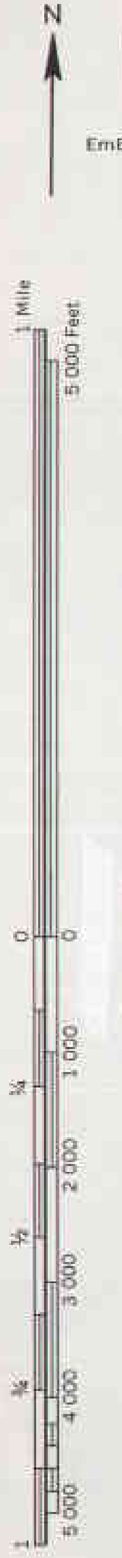
CUMBERLAND COUNTY, MAINE NO. 77

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone





Photobase from 1966 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 81

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

N

1 Mile

5 000 Feet

0 0

1/4 1 000

1/2 2 000

3/4 3 000

1 4 000

1 1/4 5 000

313 000 FEET

490 000 FEET

465 000 FEET

297 000 FEET

(Joins sheet 76)

(Joins sheet 81)

(Joins sheet 86)

(Joins sheet 83)

F A L M O U T H

P O R T L A N D

S O U T H P O R T L A N D

C A S C O B A Y

PRESUMPSCOT RIVER

BACK COVE

PORTLAND HARBOR

FORE RIVER

Deering Junction

Morrills Corner

Rocky Hill

Westbrook Jr College

Lunts Corner

Cummings School

East Deering

St Peters Church

Martin Point

Mackworth Island

MAINE SCHOOL FOR THE DEAF

Great Diamond Island

EVERGREEN CEMETERY

St Joseph's Convent

Cheverus High School

Deering

Lincoln Jr High School

Baxter School

Woodfords

Longfellow School

Deering High School

Woodfords Corner

Rosemont

Highlands

Brighton Corner

Bradley Corner

Libbytown

Oakdale

King Jr High School

UNIVERSITY OF MAINE (PORTLAND)

PORTLAND (county seat)

High School

Staples School

Maine Medical Center

West End

Mercy Hospital

Butler School

Thompson Point

GRAVEL PIT

Jack Jr High School

Reservoir

Emerson School

Munjoy Hill

East End

EASTERN CEMETERY

Fish Point

Diamond Island Ledge

Fort Gorges

Little Diamond Island

West Shore Sandy Beach

Little Diamond Island Landing

FERRY

Diamond Island Roads

US NAVAL RESERVE TRAINING CENTER

GAS AND OIL

Spring Point Ledge Lighthouse

Spring Point

Fort Scammel

House Island

Fort Scammel Point

Whitehead Passage

PORTLAND TERMINAL

GRANITE

Photobase from 1984 aerial photography. Positions of grid ticks are approximate and based on the Maine coordinate system, west zone

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 83

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

Photorevised from 1964 aerial photography. Positions and grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 84

CUMBERLAND COUNTY, MAINE NO. 85

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station. Photobase from 1964 aerial photographs. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.

Planimetry from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.
This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

297 000 FEET

490 000 FEET

Whitehead Passage

Whitehead

Spicers Cove

Spring Cove

PORTLAND

ISLAND

CUSHING

Ram Island

HsB

Ro

BAY

CASCO

ATLANTIC OCEAN

(Joins sheet 86)

(Joins sheet 83)

Ro

Outer Green Island

276 000 FEET

490 000 FEET

Trundy Point

CASCO BAY

ELIZABETH

Broad Cove

Hunts Point

Maxell Point

Staples Cove

Staples Point

Dyer Cove

Dyer Pt

CAPE ELIZABETH

(Joins sheet 90)

(Joins sheet 92)

ATLANTIC OCEAN

493 000 FEET

263 000 FEET

515 000 FEET

281 000 FEET

N

1 Mile

5 000 Feet

0

1/4

1/2

3/4

1

1 000

2 000

3 000

4 000

5 000

CUMBERLAND COUNTY, MAINE NO. 87

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station

Photobase from 1964 aerial photography Positions of grid lines are approximate and based on the Maine Coordinate system, west zone

N

1 Mile

5 000 Feet

0 1 000 2 000 3 000 4 000 5 000

(Joins sheet 84)

281 000 FEET

440 000 FEET

S C A R B O R O U G H

YORK COUNTY

West Scarboro (Dunstan)

(Joins sheet 89)

415 000 FEET

265 000 FEET

(Joins inset, sheet 91)

Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 88

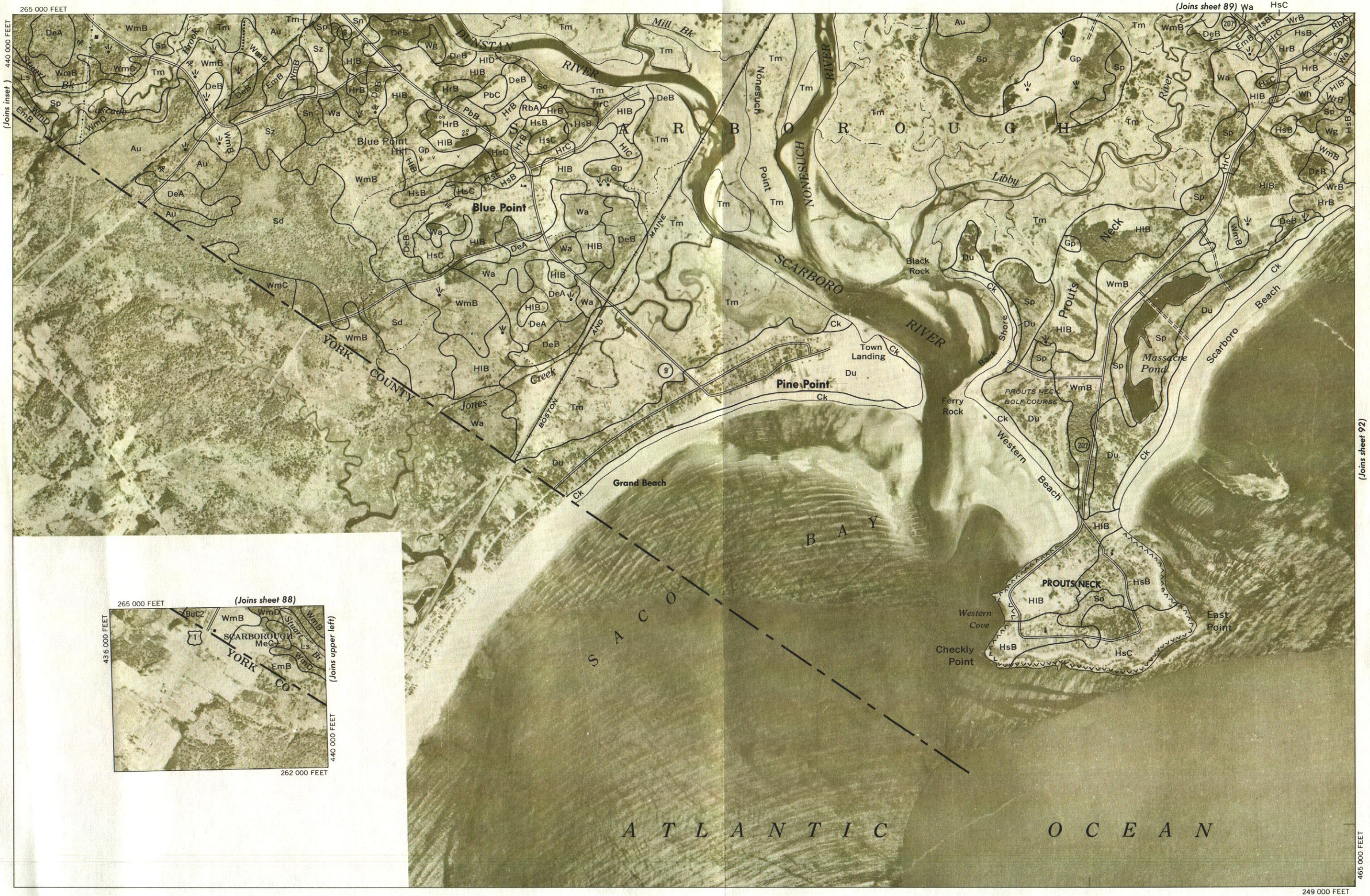
CUMBERLAND COUNTY, MAINE NO. 89

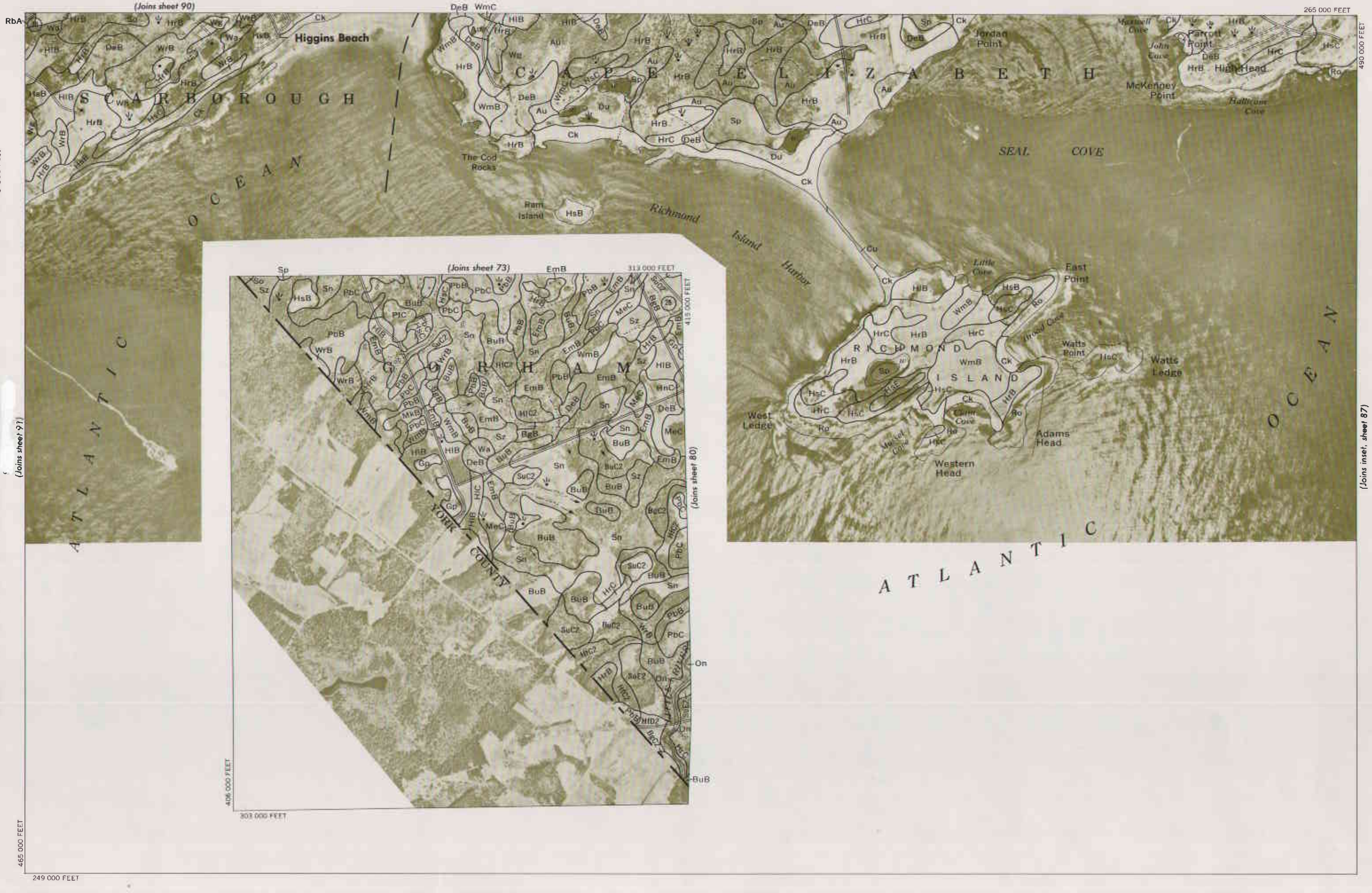
Photobase from 1964 aerial photography. Positions of grid ticks are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.

CUMBERLAND COUNTY, MAINE NO. 91

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.
Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine Coordinate system, west zone.





Photobase from 1964 aerial photography. Positions of grid lines are approximate and based on the Maine coordinate system, west zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Maine Agricultural Experiment Station.